EXHIBIT

A

VERIFIED STATEMENT (DECLARATION) NUMBER 2
IN SUPPORT OF INFORMATION DISCLOSURE STATEMENT
IN U.S. APPLICATION SERIAL NOS. [REDACTED UNDER 37 C.F.R. §1.217(d)]
09/820,377, AND 09/820,292

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I, John Dietz, hereby declare as follows:

1. I am presently an employee of iShip Inc., a wholly owned subsidiary of United Parcel Service ("UPS"). UPS is, as of the date of this Declaration, by contract, joint owner with Stamps.com Inc. of the above-named applications. Until recently, I was an employee of Stamps.com Inc., successor in interest to iShip.com, Inc., which was successor in interest to MoveIt! Software Inc. I am an inventor named on U.S. Patent Application Serial Nos. [REDACTED], 09/820,377, and 09/820,292, all of which have been assigned to Stamps.com Inc.

2. The first provisional patent application to which the present application claims priority is U.S. Provisional Patent Application Serial No. 60/158,179 which was filed on October 6, 1999, a copy of which is attached hereto as Exhibit A.

3. During 1997, I founded with others a company called at that time MoveIt! Software Inc. ("MoveIt!"). The principal offices of MoveIt! (and later iShip.com, Inc. ("iShip.com", or in the alternative, "iShip")) are in Bellevue, Washington. MoveIt! Software, Inc. was incorporated on or about May 27, 1997. I served as the Chief Operating Officer ("COO") of MoveIt and its successor, iShip.com, until the time that iShip.com merged with another company, known as Stamps.com Inc. The merged company was known as, and is known as of the date of this declaration as, Stamps.com Inc. All of the inventors of the present patent application were, at the time of the invention, employees of MoveIt!/iShip.com.

4. The founding concept of MoveIt! was to develop an affordable multi-carrier, small parcel, Internet-based shipping system for small-volume shippers such as small businesses and home offices. Carriers, such as the United States Postal Service ("USPS"),United Parcel Service ("UPS"), FedEx, and Airborne, are the companies or entities that ship small parcels from one location to another. Small parcels are letters or packages the weight of which ranges from less than one pound up to 150 pounds. The concept behind providing a multi-carrier system was to provide shippers with a single system with which shipping rate calculations, service options, and delivery schedules could be provided and compared for each parcel to be shipped for each of a plurality of carriers supported by

carrier with which to ship the particular parcel.

5. Many of the founding members of the MoveIt! team had previously worked for the consulting division of a company then known as ConnectSoft, Inc., also of Bellevue, Washington. In November 1995, UPS acquired the consulting division of ConnectSoft, Inc. The acquired ConnectSoft division became a wholly-owned subsidiary of UPS and was renamed Velleb, Inc. ("Velleb"). Velleb maintained a website at www.velleb.com.

6. At Velleb, many of the founding members of what would one day be the MoveIt! team were responsible for the development and implementation of United Parcel Service's ("UPS") shipping and tracking software package, UPS OnLine™ Professional ("UOP"). UOP was a PC-based application for a single carrier – UPS.

7. With the completion of UOP Release 3.0 in April 1997, UPS agreed to a two-step spin-off of Velleb. In the first stage of the spin-off, I and two other senior managers formed MoveIt! Software, Inc. In the second stage, a number of Velleb engineers and other employees joined MoveIt!. UPS made a substantial seed financial investment in MoveIt!.

8. During the latter half of 1997, and continuing through 1998, 1999, 2000, and indeed until the present time, MoveIt!/iShip.com and its successors in interest worked to, among other things, develop and evolve shipping technology to effectively meet the small parcel shipping needs of the small business and home office.

9. During the latter half of 1997 and early 1998 (the "1997-98 time frame"), it was a goal of MoveIt!/iShip.com to pioneer the development of a scalable, Internet-based, consumer-oriented, multi-carrier, multi-service, shipping and tracking systems. The scalability of a particular technology refers to the ability of the technology to be expanded to consistently provide all of its available features to all of its users regardless of the number of users. That is, if a system can provide a single user a certain set of features, but cannot provide multiple users the same features all at the same time, then the system would not be considered to be scalable. Further, if a system operates consistently for a certain number of users over a small network but crashes or operates inconsistently when the number of users is increased, then the system would be considered scalable if minor software settings or hardware components can be added to accommodate the additional users. If, on the other hand, a change to the system architecture would be needed to handle the additional users, then the system would not be considered to be scalable.

10. During the 1997-98 time frame, a company known as Aristo Computers, Inc., a Portland, Oregon-based company, had developed a PC-based, standalone, singe-user, multi-carrier system. The Aristo product, known as the "Aristo Parcel Shipping System", was licensed to Value-Added Resellers ("VARs") such as companies such as Pitney Bowes. Pitney Bowes resold the system under the product name of Ascend through the Pitney Bowes subsidiary known as Transcape. Pitney Bowes also deployed "Aristo-based" systems. The Aristo product was built with Microsoft FoxPro

technology which was not scalable for use by large numbers of users over the Internet.

11. By early 1998, Pitney Bowes announced on its Website an "on-line express Personal Shipping System" that "will find the least expensive and fastest way to send your express package through major carriers" and "instantly track your express package and send e-mails about its progress." Pitney Bowes also included on its Website the line: "Look forward to a new system that will let you send your express package (through your choice of carriers) all right here on-line on the Personal Mailing Solutions site".

12. By early 1998, a Massachusetts based company known as Tracer Research had developed a non-Internet based product known as "Clippership." The Clippership product was a non-Internet based multi-carrier shipping solution for high volume shippers. During this time frame, Tracer Research had certified as compatible with UPS OnLine™ Professional an integration software product, known as TracerX. TracerX provided integration between third-party or carrier-supplied shipping software and other corporate systems.

13. By early 1998, TanData, a Tulsa-based company, had been a supplier of third-party shipping software for installation on shipping dock PCs. By that time, TanData was marketing a shipping and business handling function "cartridge" for Oracle Internet Commerce Server. TanData was also involved in the Microsoft Value Chain Initiative.

14. During the early 1998 time frame, companies such as FedEx and UPS provided high-volume shippers with free carrier-specific software and hardware. Beginning sometime in or about April, 1997, UPS provided high-volume shippers with a fully integrated, standalone, single-user, PC-based hardware and software package that ran UPS OnLine™ Professional. FedEx provided high-volume shippers with a standalone, single-user, PC-based DOS-based shipper software package called FedEx PowerShip®. FedEx PowerShip® was offered in a variety of packages, including FedEx PowerShip® Passport (the most powerful of the FedEx PowerShip® suite), PowerShip2, PowerShip3, and PowerShip Plus.

15. During the early 1998 time frame, companies such as FedEx and UPS provided low-volume shippers with standalone, single-user, PC-based carrier-specific software that could be downloaded from the Internet or installed from a CD-ROM. UPS provided UPS OnLine™ Office and FedEx provided FedEx Ship™. On or about March 3, 1997, Airborne Express announced Lightship Shipper™, PC-based carrier-specific online business shipping software.

16. By the early 1998 time frame, a number of carriers and retailers supported drop-off spots where shippers could bring packages for carrier pickup. U-Ship, an OTC-traded public company based in Minneapolis, MN operated "automated shipping centers" in Kinko's and OfficeMax stores. Each U-Ship shipping center provided a non-Internet-based shipping station that had a touch screen menu offering four shipping services provided exclusively by UPS, a scale, a keyboard and a laser printer. Each U-Ship shipping center shipping station was connected to the U-Ship computer network at U-

Ship headquarters. U-Ship shipping center shipping stations provided shippers with an electronic way of recording shipping information; UPS picked up packages left at each U-Ship shipping center shipping station.

17. By the early 1998 time frame, PackageNet, a privately-held company based in Fairfield, Iowa, provided UPS package drop-off services at retail locations around the U.S., such as in grocery stores. PackageNet provided a Website. Using the PackageNet Website, Shippers could locate convenient drop-off locations, and could price UPS shipment of a package prior to dropping the package at the drop-off site. The rates charged for UPS shipment through a PackageNet drop-off location were higher than standard UPS rates.

18. In June, 1998, MoveIt!/iShip.com was invited by one of its funding sources, Draper Fisher Jurvetson, to demonstrate some shipping technology features at a gathering of high technology start-up funding sources and start-up entrepreneurs. The name of the gathering is referred to here as the "DFJ demo." At the DFJ demo, MoveIt!/iShip.com demonstrated a pared-down version of an early shipping technology prototype that was, concurrent with the DFJ demo, undergoing extensive beta testing under a beta test agreement between MoveIt!/iShip.com and a company known as College Enterprises, Inc. ("CEI") at the University of California at Santa Barbara campus (the "Santa Barbara Beta Test"). The Santa Barbara Beta Test prototype is described in paragraphs 15 through 22 of a declaration concurrently filed herewith, a true and correct copy of which, without its respective exhibits, is attached hereto as Exhibit B.

19. The DFJ prototype demo included a hardware configuration of one laptop computer, two personal computers ("PC"), and a "hub." The laptop was configured with browser software to simulate a pre-processing client (a "pre-processing client PC"). One of the PC's was configured with shipping station software to simulate a shipping station (a "shipping station PC"). The second PC was configured with DFJ prototype system software and DFJ prototype databases to simulate a server computer (a "server PC"). An account authorization was set up on a database saved on the hard drive of the server PC such that the shipping station PC could be recognized by the server PC as an authorized shipping station. With the DFJ prototype demo, there was no connection to the Internet – none of the laptop or PCs were connected to the Internet, nor was the hub. Rather, there were hard-wired connections between the laptop and the hub, between the hub and the shipping station PC and between the hub and the server PC. These hard-wired connections simulated communications over the Internet. The hub was configured to direct communications between the computers according to the IP (Internet Protocol) address designated in the communication. The laptop pre-processing client PC was configured with a first IP (Internet Protocol) address; the shipping station PC was configured with a second IP address; and the server PC was configured with a third IP address. The laptop pre-processing client PC directed queries and data input to the IP address of the server PC and imbedded in the queries and data input as the return address for responses, the IP address of the laptop pre-processing client PC. The shipping station PC directed

queries and data input to the IP address of the server PC and imbedded in the queries and data input as the return address for responses, the IP address of the shipping station PC. The server processed queries and data input, and indicated a return address in the responses as the IP address imbedded in the queries and data input as the return address. Accordingly, the hub directed queries and data input from the laptop pre-processing client PC to the server PC, and directed responses by the server PC to laptop pre-processing client PC queries and data input back to the laptop pre-processing client PC. The hub directed queries and data input from the shipping station PC to the server PC and directed responses by the server PC to shipping station queries and data input back to the shipping station PC. A shipping station scale and a shipping station thermal printer were hard-wired to, and configured with, the shipping station PC. That is, software had been installed on the shipping station PC to facilitate communications with the shipping station scale and the shipping station thermal printer, both of which were connected to the shipping station PC. Only one test shipper could use the DFJ demo pre-processing client PC at a time. Only one test shipping station operator could use the DFJ demo shipping station PC at a time. The graphic user interface displays provided by the DFJ prototype demo were those used with the Santa Barbara Beta Test. Because there was no Internet connection, no tracking between the server and the respective carrier system could be performed. The DFJ prototype demo provided only intra-system tracking with which to view the status of a package within the DFJ prototype demo system, such as between the pre-processing stage and shipping stage, or as a shipping label having been printed.

20. By September 1998, Internet websites, www.smartship.com and www.intershipper.com, had begun to provide multi-carrier shipping rate comparisons for some major carriers.

21. To the extent to which I did not recall certain details of portions of the subject matter of this declaration and to the extent to which I did not have complete personal knowledge of portions of the subject matter for this declaration, I refreshed my recollection of the details and obtained information concerning portions of the information described in this declaration by speaking personally with Steve Teglovic, the CEO of MoveIt!/iShip.com from 1997 through the relevant time periods, including 1999, William Smith, the Chief Technology Officer of MoveIt!/iShip.com from 1997 through the relevant time periods, including 1999, and David Bennett, Program Manager for MoveIt!/iShip.com from 1997 through the relevant time periods, including 1999, and by personally reviewing various non-disclosure agreements, business plans, business proposals and other documents, including those attached hereto as Exhibits.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that

such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING: John Dietz
TITLE OF PERSON IF OTHER THAN OWNER: Employee of iShip Inc.
ADDRESS OF PERSON SIGNING: 8703 NE 144th Court
Bothell, WA 98011

SIGNATURE _____

DATE : 20 July 2001

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# APPARATUS, SYSTEM AND METHODS FOR ONLINE, MULTI-CARRIER PARCEL SHIPPING MANAGEMENT

## BACKGROUND OF THE INVENTION

Individuals, small businesses and major corporations ship (the "Shipper(s)") billions of parcels every year (small office/home office shippers are referred to as "SOHO" Shippers). Each parcel carrier (the "Carrier(s)") uses its own unique rating schedule, delivery and pickup rules and schedules, and certification requirements.

Many Shippers manually refer to a mixture of separate, individual paper-based and online systems to determine the rate for shipping a particular parcel and to determine the optimal carrier with which to ship that particular parcel according to the constraints and requirements involved. With regard to shipping a particular parcel, Shippers may need to consider some combination of factors, including but not limited to parcel dimensions, parcel weight, origin/destination specifications, parcel value, parcel value loss protection, budgetary, timing, pickup, delivery, delivery notification, delivery service, and other service option constraints and requirements.

In an individualized Carrier system environment, effective comparison shopping across multiple carriers generally difficult and time-consuming. Many individual and small business Shippers rely instead on one or two familiar Carriers rather than comparison shopping each parcel across multiple Carriers.

Once a Shipper selects a particular Carrier, the Shipper must label the parcel with the information appropriate for that Carrier. In an individualized Carrier system environment, the Shipper must interpret and apply a particular Carrier's rules and requirements in order to prepare the

necessary manifest documents to ship a particular parcel.

If a Shipper deals with a particular Carrier on a recurring basis, the Shipper may set up an account with the particular Carrier ("Account-Holder Shippers"). Some Carriers provide Account-Holder Shippers with a copy of that Carrier's software system if one exists. Each individual Carrier's software system has its own unique look and feel.

Rather than learn multiple individualized systems, some small business and individual Shippers decline to use Carrier-provided shipping software systems and rely on a manual system, including the manual preparation of parcel labels; some develop a dependency on a single Carrier-provided system.

A particular Carrier's software system can be used by a Shipper to rate a parcel shipment and in some cases, to produce the appropriate labels with certified, specialized printing equipment. Many shipping systems require the use of specialized thermal label printer. That is because particular thermal label printer models certified by the Carriers generally all use the same Dots Per Inch ("DPI"). Because thermal printers met certain standards set by the Carriers and could be relied upon to print a certain size label image while maintaining the accuracy of image required to produce accurate bar-coded labels, thermal printers can therefore be pre-certified by the Carriers as meeting Carrier-specified Quality Specifications and Label Size requirements. With many Carrier-provided systems, in order to print labels that met Carrier Quality Specifications and Label Size requirements, the Shipper needs to use such a specialized thermal label printer. Because Personal Computers have varying configurations, shipping systems can not consistently provide accurately bar-coded labels that meet Carrier Quality Specifications and Label Size requirements.

SUMMARY OF THE INVENTION

The present invention utilizes a computer system (the "System") to provide Shippers with a single multi-Carrier shipping system that provides Shippers with a dynamically dimensioned online display comparison (the "Dynamically Dimensioned Multi-Carrier Graphic Array" online display, or alternatively, the "Graphic Array") of the way in which the delivery of a particular subject parcel would be rated and scheduled for delivery by each of a multitude of Carriers. The Dynamically Dimensioned Multi-Carrier Graphic Array online display is constructed by the System in response to a particular Shipper's Parcel Specifications for a particular Subject Parcel.

In an exemplary embodiment, the Graphic Array, is displayed on a display screen of a display device configured with a Shipper's PC; the Graphic Array comprises, an array of intersecting rows and columns and comprising along each column, a different one of a plurality of dates of parcel delivery, along each row a different one of a plurality of times of parcel delivery and at each of a plurality of the intersections, coded to represent a different one of said Carriers, a monetary amount for the date of delivery along the corresponding column and the time of delivery along the corresponding row. In one embodiment, a Carrier cell entry is used to represent each of the Carriers depicted on the Graphic Array; each Carrier cell entry associated with a particular Carrier is color-coded with a unique color; the monetary amount presented for each Carrier is color-coded accordingly.

The System further provides individuals and businesses the ability to process their parcel shipping transactions through, among other ways, a Shipper-specified choice of a particular Carrier from the Dynamically Dimensioned Multi-Carrier Graphic Array online display (alternatively referred

to herein as the "Graphic Array"). The System is connected to or otherwise capable of communicating through, a communications network such as a global communications network such as the Internet, which is in turn connected to, or capable of communicating with one or more Personal Computers ("PC") or other like devices.

According to some aspects of the invention, the System generates the signals to print a bar-coded shipping label on the Shipper's printer device, and records the shipping information for shipping tracking. The System, in some embodiments, supports the printing of bar-coded labels on either specialized thermal label printing devices or on laser printing devices.

Each Shipper has access to a Personal Computer ("PC") or other similar device. The Shipper's PC has a display monitor and one or more user input devices such as a key board and/or a track-ball, touch-pad, touch-screen, mouse device, scale, or bar-code reader. In some cases, the Shipper's PC is connected to a printing device. Some embodiments of the invention support printing bar code labels through the Shipper's PC. In some such printing embodiments, printing bar code shipping labels is limited to printing the labels on specialized thermal label printing devices. In other such printing embodiments, printing bar code shipping labels can be done on either supported laser printers or specialized thermal label printing devices.

The invention provides for a Network Operations Center ("NOC") which is comprised of one or more computers, such as Servers. The NOC Servers are programmed to generate the signals over the communications network to cause a display to each Shipper using the System with an online screen requesting Shipper Specifications.

The Shipper inputs the Shipper's Parcel Specifications for the Subject Parcel.

At least one of the NOC Servers is programmed to receive as input each Shipper's Parcel Specifications for each Subject Parcel. Using each Shipper's Parcel Specifications, the NOC Servers are programmed to access databases containing information about each supported Carrier. Each supported Carrier has a unique rating schedule, delivery and pickup rules and schedules, and certification requirements (the "Carrier Rules").

The Servers are further programmed to apply each supported Carrier's Rules to each Shipper's Parcel Specifications for the corresponding Subject Parcel. If, according to a particular Shipper's Parcel Specifications, a particular Carrier supports shipment of the Subject Parcel, the System prepares a packet of information about the Carrier, including, for example, the rate, time of delivery, day/date of delivery, and Carrier identifier ("Carrier Packet"). The information contained in the Carrier Packet will be used for comparison display on the Graphic Array for each category of delivery supported by the Carrier.

The System generates the appropriate signals to cause a Carrier cell entry representing each of the Carrier Packets to be displayed online in the Graphic Array for the particular Shipper's review on the particular Shipper's online PC display monitor.

The System provides a Dynamically Dimensioned Multi-Carrier Graphic Array online display to facilitate multi-Carrier rating and delivery timing comparisons by each Shipper. The Dynamically Dimensioned Multi-Carrier Graphic Array online display presents a Carrier cell entry representing each of the displayable Carrier Packets such that the Dynamically Dimensioned Multi-Carrier Graphic Array online

display contains only the Carrier Packet Carrier cell entries for the Carriers, and the information for those Carriers, that offer shipping of the particular Subject Parcel according to the particular Shipper's Parcel Specifications.

In one embodiment, the System sends programming intelligence in executable form with the generated display signals. The Client Web Browser at the Shipper's PC receives the executable programming intelligence ("Client Program") for possible later execution. The Client Web Browser uses the executable code such as in the case where the Shipper changes data to automatically and dynamically regenerate the Graphic Array. In such an embodiment, the Shipper reviews the online display of the Graphic Array; if the Shipper then inputs changes to the original Shipper Parcel Specifications, the Client Web Browser executes the Client Program to dynamically change the online display of the Graphic Array at the Shipper's PC.

Depending on the changes input by the Shipper, in some cases, the Client Program must send the changed information back to the NOC Servers for processing; in other cases, the Client Program has all the information necessary to independently regenerate a new online display that reflects the Shipper's changes to the Shipper's Parcel Specifications. With this embodiment, not only does the System provide for Shipper comparison-shopping across multiple Carriers, but further provides Shippers with the ability to change the Shipper's Parcel Specifications and view online the dynamic impact of those changes reflected on the Dynamically Dimensioned Multi-Carrier Graphic Array online display.

In an alternative embodiment, all processing is performed by the NOC Servers. The Shipper can change Shipper Parcel Specifications in this alternative embodiment, but must request the System to refresh the Dynamically Dimensioned

Multi-Carrier Graphic Array online display to reflect the changes.

The Shipper uses a user input device to pick the preferred Carrier, by for instance placing the cursor of the Shipper's PC on the displayed Carrier cell entry in the Graphic Display and clicking the Shipper's user input device (the "Selected Carrier").

As mentioned above, in some embodiments, the Shipper can use the System to generate and print a bar-coded label for the Subject Parcel according the chosen Carrier's certification standards. The bar-coded label can be printed on either a thermal label printer or on a laser printer. The Shipper specifies the type of printer to the system during initial setup procedures. Thereafter, the System uses, as appropriate, the thermal printer or laser printer module to prepare the label image for printing on the Shipper's printer.

## DESCRIPTION OF THE DRAWINGS

FIG. 1 is a graphic representation of an exemplary embodiment of the Rating and Timing Graphic Array;

FIG. 2a is a simplified schematic diagram of an overview of an exemplary embodiment of a Network Operations Center;

FIG. 2b is a simplified flow diagram of a high level overview of an exemplary embodiment of the System;

FIG. 3 is a simplified block diagram of an exemplary configuration in a typical Internet environment;

FIG. 4 is a graphic representation of an exemplary embodiment of a Location and Package Screen;

FIG. 5 is a graphic representation of an exemplary embodiment of a Location and Package Screen;

FIG. 6 is a graphic representation of an exemplary embodiment of a Service Options Screen;

FIG. 7 is a graphic representation of an exemplary embodiment of an E-Mail Messages Screen;

FIG. 8 is a graphic representation of an exemplary embodiment of a Summary Screen;

FIG. 9 is a graphic representation of an exemplary embodiment of a Ship Package Number Screen;

FIG. 10 is a graphic representation of an exemplary embodiment of a Ship Package Number/Print Label Screen'

FIG. 11 is a graphic representation of an exemplary embodiment of a Shipping Label Screen;

FIGS. 12a through 12c are simplified flow diagrams depicting an exemplary embodiment of the Rating and Timing Graphic Array creation process;

FIG. 13a is a simplified flow diagram depicting an exemplary embodiment of the Label Printing Process;

FIG. 13b is a simplified flow diagram depicting an exemplary embodiment of the Image Printing Process; and

FIG. 14 is a simplified block diagram showing the System Architecture.

DETAILED DESCRIPTION OF THE INVENTION

The computer System of the present invention provides a plurality of Shippers with a single User Interface ("UI") for all supported Carriers. The present invention makes the differences between the way in which each Carrier's unique rules and calculations must be applied to a particular Subject Parcel transparent to the Shipper. Further, the present invention provides each Shipper with a single source comparison of the rates and services offered by each supported Carrier.

FIG. 1 depicts an exemplary Dynamically Dimensioned Multi-Carrier Graphic Array online display as part of what is later described herein as a supplemental Shipper Parcel

Specification Input Screen. In the embodiment of the Graphic Array depicted in FIG. 1, the particular screen is titled the Rates and Times Screen.

As depicted in FIG. 1, the exemplary Graphic Array contains the following information and display elements: 1) valid delivery dates 63 (63-1 through 63-3) across the top of the graphic display for the selected Ship Date; 2) sorted, valid delivery times 64 (64-1 through 64-6) for all valid dates down the left side of the graphic display; and 3) color coded by Carrier, Carrier cell entries, e.g., 65, for each available rate, by date and time.

In an exemplary embodiment depicted in FIG. 1 the Graphic Array comprises an array of intersecting rows and columns. Each column corresponds to a day and date of parcel delivery. In FIG. 1, the days and dates of delivery shown are "TUE 28 SEP 99" (63-1), "WED 29 SEP 99" (63-2) and "THU 30 SEP 99" (63-3). As depicted in FIG. 1, space for other columns (63-4 through 63-7) are available for display; in the case of the example depicted in FIG. 1 however, no dates are displayed in those columns.

Each row of the Graphic Array corresponds to a time of delivery. In FIG. 1, the times of delivery are shown as "8:00 AM" (64-1), "10:30 AM" (64-2), "12:00 PM" (64-3), "3:00 PM" (64-4), "4:30 PM" (64-5), and "5:00 PM" (64-6).

At the intersection of each row (64-1 through 64-6) and column (63-1 through 63-7) of the Graphic Array is a "cell." In FIG. 1, cells will be referred to by the element 71, and by the intersecting row (1 through 6) and column (1 through 7) the intersection of which forms the space for each cell (71-1-1, 71-1-2, . . . 71-6-7). Some of the cells depicted in FIG. 1 are empty, e.g., 71-5-1, 71-6-1, 71-6-3, 71-6-4. Empty cells represent the circumstances that none of the Carriers supported by the System (the "supported Carriers") support

delivery of the Subject Parcel for the time and date for which that cell represents the intersection.

Some cells depicted in FIG. 1 have one or more cell entries. In FIG. 1, each cell entry represents a particular Carrier. Each Carrier cell entry is color coded with a unique color, the unique color corresponding to a particular Carrier as is discussed in more detail below; each Carrier cell entry contains a graphic element, e.g., 147a, and a monetary amount, e.g., 147b, which represents the price for which the corresponding Carrier would deliver the subject parcel. For instance, cell 71-1-1 contains a single Carrier cell entry 148. Cell 71-3-1 contains two Carrier cell entries 65 and 149.

A color-coding legend 62 is displayed on the Screen to identify by a name (140b, 141b, 142b, and 143b) and a color-coding symbol (140a, 141a, 142a, and 143a), each of the supported Carriers that provide the service according to the particular Shipper's Parcel Specifications for the particular Subject Parcel.

For purposes of this application, unique colors are depicted with graphic symbols. For example, a right-diagonal hash mark symbol 140a is used herein to represent the color red; a left-diagonal hash mark symbol 141a is used herein to represent the color purple; a vertical hash mark symbol 142a is used to represent the color amber; and a horizontal hash mark symbol 143a is used to represent the color blue. The particular hash mark symbols used herein and the colors mentioned herein are exemplary and are not a limitation of the invention.

Each cell of the Graphic Array that is not empty contains one or more color-coded Carrier cell entries. For example, in FIG. 1, cell 71-3-1 contains two Carrier cell entries, 65 and 149. Carrier cell entry 65 is color-coded with the right-

diagonal hash mark symbol (representing the color red) which, according to the color-coding legend 62, corresponds 140a with the Carrier identified as "Airborne" 140b. Carrier cell entry 149 is color coded with the horizontal hash mark symbol (representing the color purple) which, according to the color-coding legend 62, corresponds 143a with the Carrier identified as "USPS" 143b.

Each Carrier cell entry, e.g., 65, contains a graphic element, e.g., 65a, which contains what is known as "ALT text". As depicted in FIG. 1, a Shipper viewing the Graphic Array online can place the PC's cursor on the graphic element, e.g., 65a of a particular Carrier cell entry, e.g., 65, to display a pop-up screen 69 that displays the ALT text for that particular Carrier cell entry. In some embodiments, the ALT text will be displayed by merely placing the cursor over the graphic element for a particular Carrier cell entry and leaving the cursor in that position for a certain time interval. In alternative embodiments, the Shipper must click on the graphic element for a particular Carrier cell entry in order to display the ALT text. In the exemplary embodiment depicted in FIG. 1, the displayed ALT text, e.g., the text displayed in pop-up screen 69, contains the full Carrier name (in the depicted case, "Airborne Express") and the full Carrier service name (in the depicted case, "Express Overnight Service") for the Carrier 140b (in this case, Airborne) to which that Carrier cell entry corresponds.

As depicted in FIG. 1, the color for the Carrier identified as "Airborne" 140b is depicted in the color coding legend 62 with a right-diagonal cross-hatch symbol 140a. Accordingly, each Carrier cell entry contained within the Graphic Array with the right-diagonal cross-hatch symbol, e.g., 65, corresponds to a delivery of the Subject Parcel supported by the Carrier "Airborne." Appearing in each of the

color-coded Carrier cell entries, e.g., 65 is a graphic element, e.g., 65a, and a monetary value, e.g., 65b. The monetary value, e.g., 65b corresponds to the price that the corresponding Carrier would charge to deliver the Subject Parcel according to the time 64-3 and date 63-1 specified according to the row and column of which the intersection (which, in the case described is cell 71-3-1) contains the Carrier cell entry 65. For example, as depicted in FIG. 1, the Carrier cell entry 65, depicted with the right-diagonal cross-hatch symbol, contains the monetary amount "$9.00." Accordingly, the amount $9.00 is the price that the Carrier Airborne would charge to deliver the Subject Parcel at the identified time of 12:00 p.m. 64-3 on the identified date of Tuesday, September 28, 1999 63-1.

Similarly, as depicted in FIG. 1, the color for the Carrier identified as "FedEx" 141bis depicted in the color coding legend 62 with a left-diagonal cross-hatch symbol 141a. Accordingly, each Carrier cell entry contained within the Graphic Array with the left-diagonal cross-hatch symbol, e.g., 147, corresponds to a delivery of the Subject Parcel supported by the Carrier "FedEx."

Further, as depicted in FIG. 1, the color for the Carrier identified as "UPS" is depicted in the color coding legend 62 with a vertical cross-hatch symbol 142. Accordingly, each Carrier cell entry contained within the Graphic Array with the vertical cross-hatch symbol, e.g., 148, corresponds to a delivery of the Subject Parcel supported by the Carrier "UPS."

Similarly, as depicted in FIG. 1, the color for the Carrier identified as "USPS" is depicted in the color coding legend 62 with a horizontal cross-hatch symbol 143. Accordingly, each Carrier cell entry contained within the Graphic Array with the horizontal cross-hatch symbol, e.g.,

149, corresponds to a delivery of the Subject Parcel supported by the Carrier "UPS."

In the embodiment of the Graphic Array depicted in FIG. 1, the Graphic Array is dynamically dimensioned. For instance, only the dates and days (63-1 through 63-3) for which delivery that conforms to the particular Shipper's Parcel Specifications for the particular Subject Parcel are displayed across the top of the graphic. For example, for the date Tuesday, September 28, 1999 (63-1), at the time 5:00 p.m. (64-6), no Carrier supports delivery of the Subject Parcel.

Further, as depicted in FIG. 1, only the times (64-1 through 64-6) during which at least one of the Carrier/Services identified as supporting the delivery are displayed along the viewer's left side of the Dynamically Dimensioned Multi-Carrier Graphic Array online display.

Still further, as depicted in FIG. 1, a Carrier cell entry, e.g., 65, is displayed for each of, but only for each of, the Carriers/Services that support delivery for a particular day and time in the cell of the Graphic Array that represents delivery on a particular day and at a particular time. When the circumstances require, the System displays one or more Carrier cell entries in a single cell. For instance, cell 71-3-1 contains two entries, 65 and 149; whereas cell 71-1-1 contains only a single cell. Accordingly, as depicted in FIG. 1, the cell size expands vertically to accommodate multiple Carrier cell entries.

In the exemplary embodiment depicted in FIG. 1, the color-coding legend 62 for each of the Carriers/Services represented in the Graphic Array is displayed with color-coding graphic elements (140a through 143a) and identification labels (140b through 143b) for each relevant Carrier/Service along the viewer's right side of the rating and timing graphic. Alternatively, instead of the printed name, the logo

for the particular Carrier/Service can be displayed. As another alternative, the Carrier/Service logo can be displayed in color in the color-coding legend 62.

The particular arrangement of the color legend 62 depicted in FIG. 1 and the particular colors used in the color legend depicted therein are exemplary and are not a limitation of the invention. In an alternative embodiment, instead of using color, other visually distinctive methods are used to differentiate between different Carriers/Services. For instance, other visually distinctive methods of Carrier/Service differentiation include but are not limited to: three-dimensional texture effects, other three-dimensional effects, two-dimensional markings (for instance, dots, cross-hatching, and the like), lighting effects, graphic symbols (for instance, the logos of the Carriers/Services) and any combination of the aforementioned features with color.

In the embodiment of the Graphic Array depicted in FIG. 1, the exemplary Graphic Array is depicted as horizontally wide enough to accommodate seven delivery days (63-1 through 63-7) within a particular delivery timespan. The depiction in FIG. 1 of the Graphic Array as a fixed size accommodating up to seven delivery days is exemplary and is not a limitation of the invention. In alternative embodiments, the Graphic Array online display collapses or expands in total size to reflect the actual number of rows and columns that need to be present in order to display the Carrier cell entries for the Carriers/Services that support delivery of the Subject Parcel according to the Shipper's Parcel Specifications.

The arrangement as depicted in FIG. 1 of the parcel delivery days and dates (63-1 through 63-7) across the top and the parcel delivery times (64-1 through 64-6) along the left side of the Graphic Array is exemplary and is not a limitation of the invention. In one alternative embodiment, the parcel

delivery days and dates are displayed across the bottom, and the parcel delivery times are displayed on the viewer's right side, of the Graphic Array. In other alternative embodiments, the parcel delivery days are arranged on one of the two sides of the Graphic Array and the parcel delivery times are arranged along the top or the bottom of the Graphic Array. In such an alternative embodiment, the cells of the Graphic Array are expandable horizontally to accommodate the appropriate number of relevant Carriers/Services.

Described in more detail below are: 1) General System Communications -- an exemplary way in which the System generally communicates with one or more Shippers using a global communications network such as the Internet; 2) the Shipper User Interface -- an exemplary way in which the System prompts each Shipper for, and facilitates the collection of, Shipper Parcel Specifications for each Subject Parcel; 3) Timing and Rating -- the logic flow with which the System processes a particular Shipper's Parcel Specifications for a particular Subject Parcel in order to construct the Graphic Array; 4) Automatic Dynamic Regeneration of Display -- the logic flow with which the System regenerates certain display screens such as the Graphic Array in response to a particular Shipper's changes to the Shipper's Parcel Specifications; 5) Printing Shipping Labels and Dimensionally Accurate Images -- the logic flow with which the System generates the signals necessary to facilitate the printing of an image-accurate shipping label on the Shipper's own printer; and 6) System Architecture -- an exemplary System Architecture.

## 1) GENERAL SYSTEM COMMUNICATIONS

FIG. 2a is a simplified overview diagram depicting an exemplary embodiment of the System. As depicted in FIG. 2a, multiple servers 10-16 are provided in a Network Operations

Center ("NOC"). At least one of the Servers 10-16 can handle multiple telecommunications connections at one time. In the embodiment of the NOC depicted in FIG. 2a, one Server 10 provides the computer resources to perform Proxy & Firewall functions; one Server 11 provides the computer resources to act as the NOC Client Server; one Server 12 provides the computer resources to act as the Tracking Server to obtain Carrier tracking information 19 to provide Shippers; one Server 13 provides the computer resources to act as the Database Server to access data from one or more databases 17 of information; one Server 14 provides the computer resources to act as the Shipping Server; one Server 15 provides the computer resources to act as the Web Server; and one Server 16 provides the resources to provide other services, such as the upload of manifest data 18 to the Carrier Host Systems.

It should be understood that the overview of the System depicted in FIG. 2a is exemplary. The depiction of Server 13 in FIG. 2a as having access to one or more databases 17 is not a limitation of the invention; in alternative embodiments, any or all of the Servers, 10-16, have access to databases and external storage medium.

The Servers 10-16 are connected to or otherwise capable of communicating through, a communications network such as a global communications network such as the Internet 2, which is in turn connected to, or capable of communicating with one or more Personal Computers ("PC") or other like devices, e.g. 1a, 1b, . . . 1n. The World Wide Web (WWW or Web) is an access protocol for HTTP (HyperText Transfer Protocol -- which is the communication protocol used by the Internet). The unique identifier for a Server computer is called the IP (Internet Protocol) address; the unique identifier for a web site (web page) is called the URL (Uniform Resource Locator). A URL indicates, among other things, where the Server is located,

the location of the web site on the Server, the name of the web page and the file type of each document.

Users access and browse the Web using a web browser that generally resides and is executed on the user's PC (e.g., 1a, 1b, . . . 1n). A web browser allows each Shipper user to retrieve and render hyper-media content from the Servers. Commercially available web browsers such as Netscape's Navigator™ and Microsoft Internet Explorer™ are very common and accessible by PC users.

The Internet works based on a client/server model. The present invention uses the client/server model to support the communication with and processing for each of multiple Shippers. The Servers 10-16 are the server; each Shipper's PC 1a, 1b, . . . 1n is a client. The present invention uses the web browser with which each Shipper's PC accesses the Internet to perform certain functions as further described herein.

Web sites are locations on Servers, such as one or more of the Servers, 10-16, that are accessible through the Internet 2. The Servers 10-16 host one or more web sites which are accessible by Shipper users with PCs (e.g., 1a, 1b, . . . 1n) connected with the Internet 2.

Carrier Rules, Shipper account information and other content is stored by the Servers, e.g., 13 in databases e.g. 17. Shippers with PCs (e.g., 1a, 1b, . . . 1n) connected to the Internet 2 access Carrier Rules, Shipper account information and other content that is stored by the Servers, e.g., 13 in databases e.g. 17 through a User Interface, which is described in detail below.

FIG. 3 shows a block diagram of an exemplary Internet client/server embodiment of the present invention. PCs 1a-1n are used by the Shippers and are connected to the Internet 2 through the communication links 3a-3n. Optionally, a local network 4 may serve as the connection between some of the PCs

1a-1n, such as the PC 1a, and the Internet 2. Servers 10-16 are also connected to the Internet 2 through respective communication links.

It should be noted that the use of suffixes such as "a" through "m" or "n" in connection with numbered elements of the FIGURES herein are exemplary and are not a limitation of the invention. Rather, the suffixes "a" through "m" or "n" are used to represent a plurality, but unknown number, of similar elements.

FIG. 3 depicts an exemplary configuration of a plurality of PCs (1a-1n) connected to the Internet. Each of the PCs 1a-1n includes a central processing unit ("CPU") 20a for processing and managing data; user input devices such as a keyboard 21a and a mouse 22a for inputting data and a main memory 23a such as a Random Access Memory ("RAM"). Information in text, graphic and other forms is displayed on the display monitor ("CRT") 2a6 under the control of the CPU 20a. A communication device 28a, such as a modem, provides access 3a to the Internet 2. Optionally, one or more of PCs 1a-1n may be connected to a local network 4. In some embodiments, one or more Input/Output ("I/O") devices, such as a printer 25a, scale 24a, or a bar code reader 27a are configured with the PC.

2) THE SHIPPER USER INTERFACE

FIG. 2b is a simplified flow diagram depicting an exemplary logic flow of the System. As depicted in FIG. 2b, at least one of the Servers 10-16 are programmed to provide a User Interface ("UI") that prompts each Shipper user for information about a particular parcel (the "Subject Parcel") and the Shipper's shipping and delivery requirements ("Shipper Parcel Specifications") 401. At least one of the Servers 10-16 is programmed to receive as a set of input data a

particular Shipper's Shipper Parcel Specifications for a particular Subject Parcel 402. In response to each Shipper's Shipper Parcel Specifications, at least one of the Servers 10-16 accesses 403 one or more databases of information concerning, among other things, the Carrier Rules for each of the Carriers supported by the System (the "Supported Carriers") 404a through 404n. The Carrier Rules for each of the Supported Carriers are contained in one or more databases 404a through 404n.

As further depicted in FIG. 2b, the System then applies the Carrier Rules for all Supported Carriers to each particular set of Shipper Parcel Specifications 403. From the result of the application by the System of the Carrier Rules to a particular set of Shipper Parcel Specifications, the System prepares a Graphic Array that displays a rating and timing comparison of the delivery services by the supporting Carriers that are available to provide the delivery of the Subject Parcel according to the Shipper's Parcel Specifications 405. The System then formats the Graphic Array for display on the Shipper's PC 406, and generates the signals to the Shipper's PC to display the formatted Graphic Array 407.

In one embodiment of the invention, the System provides multiple modes of operation, among which are the Service Comparison Mode and the Shipping Mode. The Service Comparison Mode requires origin and destination zip codes but does not require full address information. The purpose of the Service Comparison Mode is to provide the Shipper with multi-Carrier comparisons of rates, and shipping and delivery options and requirements for each of multiple Carriers. In the Shipping Mode, the Shipper must provide the full address and contact information. The purpose of the Shipping Mode is to print a shipping label or otherwise provide the information necessary

to prepare a shipping manifest document. Shipper Parcel Specifications are input in both the Service Comparison Mode and the Shipping Mode.

FIGS. 4 and 5 depict an exemplary Shipper Parcel Specification Input Screen, which in the embodiment depicted is titled the Location and Package Screen.

As shown in FIG. 4, the Shipper is asked to input the location 40 from which the parcel will be shipped. A pull down menu activation mechanism 41 is provided to allow the user to pull down a menu (not shown) of different shipping locations. It should be noted that the exemplary selection mechanisms, e.g., "pull down menu", "drop down selection", and others, described herein are used for illustrative purposes and are not a limitation of the invention.

The Shipper activates the pull down menu by placing the cursor of the Shipper's PC over the pull down menu activation mechanism 41 and leaving the cursor in the same position for a certain period of time (this method of activating a selection mechanism will be referred to herein as a "Pause Activation"). In alternative embodiments, the Shipper activates the pull down menu by placing the cursor of the Shipper's PC over the pull down menu activation mechanism 41 and clicking the Shipper's user input device (this method of activating a selection mechanism will be referred to herein as a "Click Activation"). It should be understood that for each activation mechanism depicted in the User Interface of the Present Invention, that the exemplary embodiments of the User Interface depicted herein use the Pause Activation method; alternative embodiments use the Click Activation method.

References herein to "clicking" mean that the Shipper places the cursor of the Shipper's PC on the subject item and clicks the Shipper's user input device.

If the Shipper activates the pull down menu activation, a menu of different shipping locations (not shown) appears in the Location area 74 of the screen. The Shipper then selects one of the shipping locations by placing the cursor of the Shipper's PC over a particular shipping location in the shipping location menu and clicking the Shipper's user input device, e.g., mouse.

It should be understood that for each selection mechanism depicted in the exemplary embodiments of the invention, selection of a particular choice from such a selection menu is made by the Shipper clicking the Shipper's user input device.

There are two types of shipping locations, ship centers and customer drop offs. Ship centers are those locations which refer to a database of specific locations, from which a specific location from the available locations must be selected to determine rates, such as an "iShip Center". Customer drop offs are those shipping locations from which a specific location need not be selected to determine rates, such as a "drop box", "carrier counter" or "call for pickup". The shipping location pull down menu displays each shipping location category, e.g., iShip Center, other specific shipping center types, drop box, carrier counter, call for pickup, etc.

If the Shipper selects a particular "ship center" type from the shipping location pull down menu (not shown) as the shipping location, the User Interface will display, as shown in FIG. 5, three elements: 1) a table 58 with the Location Address, Pickup Times and Comments Area; 2) a Browse button 59; and 3) a destination Zip Code field 42. Clicking the Browse button 59 will display additional Drop Off Locations in a Pop-up window (not shown).

If the Shipper selects a "customer drop off" as the shipping location, the User Interface will display, as shown

in FIG. 4, two elements: 1) Origin Zip Code Field 53; and 2) Destination Zip Code Field 42.

For either class of shipping location, if an iShip Shipping Station will not be present at the selected shipping location, the System displays a notice (not shown) to the customer telling them that they must have a laser printer to ship using the specified location.

If the Shipper is Logged On to the System and has established an account, the System will default the Shipping Location to the Shipper's specified Preferences which the Shipper inputs (not shown) the first time that the Shipper logs into the System. If the Shipper's specified Preference is a "customer drop off" location, the System populates the Origin Zip Code with the Shipper's default Zip Code which the Shipper inputs (not shown) the first time that the Shipper logs into the System.

If no location is selected by the Shipper, the System displays a message (not shown) asking the Shipper to select a shipping location.

In the Package area 75 of the screen there are the following controls or control groups: 1) "Packaging" which includes various types of parcel packaging , as shown in item numbers 43-47 and includes Length 48, Width 50 and Height 49 which are required data fields for parcels designated by the Shipper as the type "Other Packaging"; 2) Weight 51 (If the Shipper specifies one of the recognized carrier packaging types (Letter, Pak, Box, Tube) the field will be auto filled with "letter", "pak", etc.); and 3) additional handling 52. If "Letter" is selected the weight will be set by the System to 0.5 lbs. Otherwise, weight may be input by the Shipper using a user input device such as a keyboard, with weights ranging from 1 to 150 lbs. If a specific weight is selected or input, the Packaging Type will be set to Carrier Box.

In one embodiment of the invention, the Shipper's PC is configured with a scale. The Shipper establishes in the System certain information about the Shipper's PC configuration at the time the Shipper sets up an Account. If the Shipper's PC is configured with a scale, the Shipper specifies scale configuration information such as: the make and model of scale, and the type of port (e.g., serial or parallel) with which the scale is configured with the PC. Further, the System provides storage and access for the Shipper's scale configuration information in a database.

The System supports various makes and models of scales. Each scale make and model has a set of features and requirements for which the System must be programmed in order for the System to communicate properly with each particular scale. The System provides an ActiveX control dedicated to communications with peripheral devices configured with client PCs ("Shipping Station ActiveX Control"). Contained within the Shipping Station ActiveX Control is a table (the "scale table") containing entries for each supported scale make and model and provides logic to process the communication information for each scale make and model as appropriate. It should be understood by someone skilled in the art that the Shipping Station ActiveX Control facilitates communications with various devices on the client machine. The Shipping Station ActiveX Control and the scale table are requested by the web page (the "System/scale interface") containing the Weight field 51 at the time that the Shipper activate the Weight field 51. Once the web page requests the Shipping Station ActiveX Control, the Shipping Station ActiveX Control is automatically installed on the client. In the event that the Shipping Station ActiveX Control is updated to facilitate the support of additional scale makes and models, the Shipping Station ActiveX Control is automatically reinstalled on the

particular client PC the next time that the Shipper activates the Shipping Station ActiveX Control.

The Shipper places the Subject Parcel on the scale. The Shipper activates the Shipping Station ActiveX Control by placing the cursor of the Shipper's PC on the Weight field 51. The System checks the Shipper's scale configuration information to determine whether the Shipper's PC is configured with a scale. If so, the System activates the System/scale interface.

In one embodiment of the System/scale interface aspect of the invention, the System uses ActiveX control language and the client's web browser, such as Internet Explorer browser. Using the Shipper's scale configuration information, the System calls Windows libraries to open the serial or parallel port with which the scale is configured, as the case may be and as is specified in the Shipper's scale configuration information. Windows is an operating system used with most PCs.

The System uses the information for the particular scale make and model from the scale table of scale makes and models to send a communication query to the particular scale. Typically, the communication query information required by a particular scale make and model is a particular set of characters. Each scale make and model recognizes a unique set of characters as a request for a weight. Accordingly, the appropriate set of characters that means a request for weight to a particular scale make and model is stored in the scale table for a particular scale make and model.

After a proper query, a scale will return a data stream containing the weight of the parcel. Depending on the scale make and model, other types of information may be contained in the return data stream. The System accesses the scale table to interpret the return data stream according to the scale

make and model rules as stored in the scale table and as programmed in the Shipping Station ActiveX Control.

Other scale communication information is contained in the scale table for each scale make and model, including, for example: the character string that communicates a request as to whether or not the weight is stabilized; the default contents of the return data stream of the weight from a particular scale make and model; and the character string to request that the scale send the weight mode with the return data stream. Weight mode is the mode with which the scale measures weight (e.g., pounds, kilograms, etc.).

In one embodiment, as long as the Shipper's cursor remains on the Weight field 51, the System polls the scale repeatedly requesting the weight and requesting notification that the weight is stabilized. Each time the System polls the scale, the System tests to determine whether or not there is a difference in the weight as compared with the last time that the System polled the scale. If the System determines a difference in weight, then the System uses the Shipping Station ActiveX Control to fire an event to the client web browser to display on the User Interface screen that the weight has changed.

In one embodiment, once the Shipper removes the cursor from the Weight field 51, the System stops polling the scale. If prior to the last polling to the scale, the scale notifies the System that the weight has stabilized, the System will proceed with preparing the Graphic Array if requested to do so by the Shipper. Otherwise, if the System determines a difference in weight, the System notifies the Shipper that the weight is not stable.

The Shipper can use the Shipper's input device connected to the Shipper's PC, such as a mouse 22a, to position the cursor on one of the navigational buttons 54-57 shown at the

bottom of the screen as depicted in FIG. 5. If the Shipper clicks the "Next" button 54, the System will display the next Screen, which, in the embodiment depicted, is the Rates and Times Screen (an exemplary embodiment of which is depicted in FIG. 1). If the Shipper clicks the "Reset" button 55, the System will clear the values displayed on the current screen. If the Shipper clicks the "Cancel" button 56, the System will cancel the Shipper's Parcel Specifications and the Shipper's service request. If the Shipper clicks the "Help" button 57, the System will display help text to explain to the Shipper the appropriate possible actions.

FIG. 1 depicts an exemplary supplemental Shipper Parcel Specification Input Screen, which in the embodiment depicted, is titled the Rates and Times Screen. The Shipper is asked to input the Expected Ship Date 60. In the exemplary embodiment depicted, a drop down menu activation mechanism 61 provides the Shipper the ability to activate a pull down menu (not shown) of seven entries beginning with the current date and includes the six days immediately following the current date. The format used is "M/D/YY - Day name". "Today" and "Tomorrow" are displayed appropriately. The number of entries provided by the selection mechanism, the format of the Expected Ship Date, and other features described herein are exemplary and are not a limitation of the invention.

In the exemplary embodiment depicted in FIG. 1, once the Shipper selects the Expected Ship Date, the System uses the Expected Ship date and the other information provided by the Shipper, as in the screens depicted in FIGS. 4 and 5, to access the Carrier Rules, apply the Carrier Rules, and prepare the Graphic Array containing the delivery prices and delivery times for the Subject Parcel according to the Shipper's Parcel Specifications. The System will then generate the signals

necessary to display the Graphic Array and cause the Graphic Array to be displayed on the Shipper's PC.

Once the Graphic Array is displayed, the Shipper can change previously input information and the System will automatically regenerate the Graphic Array with the delivery rates and delivery times that have been updated to reflect the new information. For instance, if the Shipper selects a new shipping date, the System will regenerate the Graphic Array with the appropriate new rates and times.

In the exemplary embodiment depicted in FIG. 1, a Ship Location Type drop down menu activator 67 is located below the Graphic Array. The particular location of the Ship Location Type selection mechanism as described herein is exemplary and is not a limitation of the invention. The list of locations is the same as the Shipping Location Type drop down menu described above in the description of FIGS. 4 and 5. If the Shipping Location class is a "ship center", a "Find Location" button 68 is displayed next to the drop down menu. In order to open the Drop Off Locator in a pop-up window, the Shipper places the Shipper's PC cursor on the "Find Location" button 68 and clicking the Shipper's user input device. The Origin Zip Code and Ship Location type values supplied by the Shipper are used as parameters for the Drop Off Locator to locate a list possible Drop Off Location choices. The Shipper can select a Drop Off Location from the Drop Off Locator menu. The system dynamically responds to changes by the Shipper to Origin Zip Code and Ship Location type to present choices of Drop Off Location choices.

Navigational buttons appear at the bottom of the Rates and Times Screen depicted in FIG. 1. Clicking the "Back" button 70 will return the Shipper to the previously displayed screen, which in the embodiment depicted is the Location and Package Screen as depicted in FIGS. 4 and 5. Clicking the

"Next" button 54 will cause the next screen, which in the embodiment depicted is the Service Option Screen (FIG. 6), to be displayed but only if the Shipper has selected a particular Carrier cell entry. For example, if the Shipper click on a particular Carrier cell entry such as 65, the System will allow the Shipper to then click on the "Next" button 54 and proceed to the Service Option Screen as depicted in FIG. 6.

If a user returns to the Rates and Times Screen (FIG. 1) from the Service Option Screen (FIG. 6), any Service Options selected by the Shipper from the Service Option Screen (FIG. 6) will effect the displayed rates and will be displayed (not shown) as abbreviations below the Shipping Location field 66.

FIG. 6 depicts an exemplary further supplemental Shipper Parcel Specification Screen, which in the embodiment depicted is titled the Service Options Screen. The Service Options Screen provides for Shipper input of Service Option Selections and displays a Single Day Rate Graphic Array. The Service Options supported in the depicted embodiment are: 1) Loss Protection (Declared Value) 76; 2) E-Mail Delivery Notification 83; 3) Verbal Delivery Confirmation 85; 4) "Service must be guaranteed"; 86 5) "Destination is a Residence" 87; and 6) "Signature not Required" 88. Selection of an option on the screen depicted in FIG. 6 is accomplished by the Shipper placing the cursor on the option selection mechanism and clicking the Shipper's user input device.

With respect to the Loss Protection (Declared Value) Service Option, if the Shipper selects the Declared Value Option 81, the Shipper must enter a value 82 of greater than $100.00, and equal to or less than $50,000.00. The default for Loss Protection is "Basic Coverage" 80 which provides automatic coverage for the first $100.00 of Declared Value If the Declared Value option 81 is selected and a value 82 entered, the System will update the Single Day Rate Graphic

Array 96 with changes for each individual Carrier's rates, e.g., 97.

It should be noted that the Carrier Rules described herein, such as in the case of the defaults, threshold values, and the like concerning Loss Protection are contained in the Carrier Rules database (404a through 404n as depicted in FIG. 2b), and for special cases, are programmed as part of the System. Carrier Rules vary from Carrier to Carrier; Carrier Rules are subject to change. The Carrier Rules described herein are therefore not a limitation of the invention.

With respect to the E-Mail Delivery Notification Option, two controls are provided - a checkbox 83 and an "E-Mail Others" button 84. If the E-Mail Delivery Notification Option checkbox 83 is checked the rates, such as those displayed in the Single Day Rate Graphic Array 96, will be updated to reflect each Carrier's charges for the provision of E-Mail Notification services. If Shipper clicks the "E-Mail Others" button 84, the following will occur: 1) If the checkbox 83 has not already been checked, it will be checked by the System; and 2) an "E-Mail Others" pop-up window will be displayed by the System as depicted in FIG. 7.

FIG. 7 depicts an exemplary E-Mail Others "Messages" pop-up Window which allows the Shipper to identify the "To" or "cc" status of the desired notification 105 using a drop down menu activator 106 and which allows the user to enter each e-mail recipient's Name 103 and E-Mail Address 104. FIG. 7 depicts two Recipients 107 and 108; the screen is exemplary and is not a limitation of the invention.

With respect to the Verbal Delivery Confirmation Option, if the Verbal Delivery Confirmation Option checkbox 85 is checked, the rates, such as those displayed in the Single Day Rate Graphic Array 96, will be updated to reflect each Carrier's charges for the provision of Verbal Delivery

Confirmation services. If the Verbal Delivery Confirmation Option checkbox 86 is checked, the System will use the Shipper's Return Address Phone and Name as supplied by the Shipper during Account setup (not shown), as the information to be supplied to UPS.

With respect to the "Service must be guaranteed" Option, if the "Service must be guaranteed" Option checkbox 86 is checked, the rates and Carrier/Service cells, such as those displayed in the Single Day Rate Graphic Array 96, will be updated to remove any Carrier/Service cell for which service is not guaranteed.

With respect to the "Destination is a Residence" Option, if the "Destination is a Residence" Option checkbox 87 is checked, the rates and Carrier/Service cells, such as those displayed in the Single Day Rate Graphic Array 96, will be updated to remove any Carrier/Service cell which does not provide service to Residence Destinations.

With respect to the "Signature not Required" Option, in the embodiment depicted in FIG. 6, if the "Signature not Required" Option checkbox 88 is checked no change will be applied to the rate graphic. In the embodiment depicted in FIG. 6, the "Signature not Required" Option is a FedEx only flag and does not effect any other Carrier or any Carrier rate.

The Single Day Rate Graphic Array as displayed in FIG. 6 is similar to the previously described Graphic Array in that the Single Day Rate Graphic Array is dynamically dimensioned and reflects the Carriers that provide the delivery service requested by the Shipper for a particular Subject Parcel. As with the Graphic Array, the embodiment of the Single Day Rate Graphic Array depicted in FIG. 6 uses a color-coded legend 91 and color to distinguish the rates for each Carrier from the rates for the other Carriers.

The Single Day Rate Graphic Array contains a number of elements. First, the selected delivery date 90 is displayed at the top of Single Day Rate Graphic Array. The displayed date is bordered on the left 98 and right 99 with arrow buttons. If the Shipper clicks the left arrow button 98, the date will go back one valid delivery date. If the Shipper clicks the right arrow button 99, the date will move forward one valid delivery date. The range of valid delivery dates is determined by the System according to the Expected Ship Date 60.

Sorted, valid delivery times 93-1 through 93-5 for all valid dates are displayed down the left side of the Single Day Rate Graphic Array. Above the delivery times are up and down arrow buttons 100a and 100b respectively. If an up or down arrow button (100a and 100b respectively) is pressed, the list of available times 93-1 through 93-5 will scroll up or down appropriately, if and only if the list exceeds the Single Day Rate Graphic Array display area 96.

A Ship Location Type field 66 and Ship Location drop down menu activator 67, are displayed below the Single Day Rate Graphic Array and operate in a manner as previously described in FIG. 1. If the Shipper changes the Ship Location selection, the System will update the Single Day Rate Graphic Array to reflect any rate changes or surcharges that result from the change.

As with the Rates and Times Screen (FIG. 1), the Single Day Rate Graphic Array is color coded by Carrier in a color-coding legend 91. Carrier cell entries, e.g., 97, for each Carrier are presented in a color coded display of the available rate, by date and time.

As depicted in FIG. 6, the color for the Carrier identified as "Airborne" 140b is depicted in the color coding legend 91 with a right-diagonal cross-hatch symbol 140a.

Accordingly, each Carrier cell entry, e.g., 97, contained within the Single Day Graphic Array with the right-diagonal cross-hatch symbol 140a, corresponds to a delivery of the Subject Parcel supported by the Carrier "Airborne" 140b.

Each Carrier cell entry, e.g., 97, contains a graphic element, e.g., 97a, which contains what is known as "ALT text". A Shipper viewing the Single Day Rate Graphic Array online can place the PC's cursor on the graphic element, e.g., 97a of a particular Carrier cell entry, e.g., 97, to display a pop-up screen (not shown) that displays the ALT text for that particular Carrier cell entry. The ALT text contains information about the Carrier, as described in FIG. 1, such as the full Carrier name and the full Carrier service name. The contents of the ALT text described herein is exemplary and is not a limitation of the invention.

Appearing in each of each of the color-coded Carrier cell entries is a monetary value, e.g., 97b, of the price that the corresponding Carrier would charge to deliver the Subject Parcel according to the time and date specified. For example, as depicted in FIG. 6, the Carrier cell entry 97, depicted with the right-diagonal cross-hatch symbol 140a, contains the amount $9.00 (97b). Accordingly, the amount $9.00 (97b) is the price that the Carrier Airborne would charge to deliver the Subject Parcel at the identified time of 12:00 p.m. 93-3 on the identified date of Tuesday, September 28, 1999 90.

Similarly, as depicted in FIG. 6, the color for the Carrier identified as "FedEx" 141b is depicted in the color coding legend 91 with a left-diagonal cross-hatch symbol 141a. Accordingly, each Carrier cell entry contained within the Graphic Array with the left-diagonal cross-hatch symbol, e.g., 107, corresponds to a delivery of the Subject Parcel supported by the Carrier "FedEx."

Further, as depicted in FIG. 6, the color for the Carrier identified as "UPS" 142b is depicted in the color coding legend 62 with a vertical cross-hatch symbol 142a. Accordingly, each Carrier cell entry contained within the Graphic Array with the vertical cross-hatch symbol, e.g., 108, corresponds to a delivery of the Subject Parcel supported by the Carrier "UPS."

In the embodiment of the Service Options Screen depicted in FIG. 6, the navigational buttons operate much the same as has been previously described except that clicking the "Back" button 101 will display the previous screen, which in the embodiment depicted is the Rates and Times Screen (FIG. 1); clicking the "Next" button 102 will display the next screen, which in the embodiment depicted is the Summary Screen (FIG. 8). The Shipper must select a Carrier cell entry before the System will display the Summary Screen. To select a Carrier cell entry, the Shipper places the cursor over the entry and clicks the user input device. In an alternative embodiment, the Shipper double clicks a Carrier cell entry to select the entry. Clicking the Reset button 56 will clear all fields in the Service Option Screen depicted in FIG. 6 and return the display of the Location and Package Screen (FIGS. 4 and 5).

FIG. 8 depicts an exemplary embodiment of a Summary Screen. The Summary Screen depicted displays the Shipper Parcel Specifications 110 and provides a detailed list and total, of the selected Carrier's charges. Clicking on the "Next" button 112 causes the display of the first of a series of several screens (not shown) requesting the necessary Shipper and Recipient information. Once the Shipper has input all of the necessary information, the Shipper is presented with a final Summary and Payment Screen (not shown), which in addition to the fields depicted in FIG. 8, further requests

Payment information, such as Payment Method, Credit Card No., Expiration Date, and Credit Card Type.

In one embodiment of the invention, a Package Number 120 is displayed online on a Package Number Screen with notification that the label will be printed at a shipping location previously designated by the Shipper. FIG. 9 depicts an exemplary embodiment of a Package Number Screen. The Shipper can Void the Package Label at this point by clicking the Void Package button 121. The Shipper can request shipping of a new parcel by clicking the "New Package" button 122 or can indicate completion of shipping instructions by clicking the "Done" button 123.

FIG. 10 depicts an exemplary embodiment of a Generate Shipping Label Screen. The Shipper is given instructions 125 as to how to print the label. Clicking the "Generate Label" button 124 causes the bar-coded label to be generated.

FIG. 11 depicts an exemplary embodiment of a Print Label Screen. At the top of the Screen, an instruction 130 is displayed to scroll to the bottom of the screen for instructions. The generated label 131 is displayed in the main body of the screen. Instructions for printing the label 132 are displayed at the bottom of the screen. Clicking the "Print Label" button 133 (visible only for supported web browsers) will cause the label to be printed. Clicking the "Done" button 134 will close the web browser window.

3) TIMING AND RATING

FIGS. 12a through 12c are simplified flow diagrams depicting the initial Timing and Rating procedure.

In the embodiment of the invention depicted in FIGS. 12a through 12c, the functions of the Shipper entering shipping information 150, displaying errors to the Shipper that

insufficient shipping information has been provided and prompting the Shipper for additional information 153, and displaying the Carrier/Service rate and time graphic 160, are all processed by the Web Browser at the Client. In the embodiment depicted, all other functions and processes depicted in FIGS. 12a through 12c are performed by one or more of the NOC Servers.

It should be noted that the depicted separation of functions between the Web Browser at the Client on the one hand and the NOC Servers on the other hand represents an initial procedure to construct the Graphic Array in response to initial Shipper input of Shipper Parcel Specifications. As is explained in more detail below, after the initial construction of the Graphic Array, the System can distribute certain of the functions for supplemental regeneration of the Graphic Array to the Web Browser Client.

As depicted in FIG. 12a, the Shipper (User) enters shipping information (Shipper Parcel Specifications) 150. The System validates the shipping information 151.

In the embodiment depicted, at a minimum, the System requires Source Postal Code, Destination Postal Code, Parcel Weight, Type of Shipment, and the Shipping Location in order to determine a timing schedule and rates for each supported Carrier. If the Shipper has not provided at least these minimum specifications, then the System displays error messages 153 prompting the Shipper to input further Shipper Parcel Specifications 150.

If the Shipper has supplied the minimum required specifications, then the System accesses the Shipper Database 195 to identify any user-specified Carrier designations and to determine the Carrier accounts for the appropriate Shipper 154. Using the Shipper Parcel Specifications, the System then accesses the Carrier Databases (404a through 404n) and

determines all possible Carrier/Services that support shipping of the subject parcel 155.

It should be noted that in some embodiments, the Shipper can restrict the identity of Carriers to be used in the construction of the Graphic Array. A Shipper may choose to restrict the System to certain Carriers, for instance, if the Shipper prefers to work only with certain Carriers.

The System then examines each Carrier/Service in the set of supporting Carrier/Services 156. The next step 157 is a juncture for return of control from a number of points in the System logic and is performed for each Carrier/Service in the set of supporting Carrier/Services.

If the System has examined all possible supporting Carrier/Services 158, the System assembles the Graphic Array from the delivery rate set 159 and displays the Graphic Array to the user 160. As was previously explained, the dimensions of the Graphic Array are dynamic.

As long as there are further Carrier/Services that remain to be examined in the set of supporting Carrier Services, the System continues to perform the process described below.

Using the Expected Shipping Date, the System switches the Carrier/Service's shipping timespan into possible delivery dates and times 161. Next 162, the System determines whether the shipping timespan ends on a Saturday 163. If so, the System accesses the Carrier Database (404a through 404n) to determine whether the particular Carrier/Service supports Saturday Delivery 164. If the particular Carrier/Service does not support Saturday Delivery, then the particular Carrier/Service is eliminated 177 from the delivery rate set and the System proceeds with the next Carrier/Service in the delivery rate set 157.

If the particular Carrier/Service supports Saturday Delivery, the System determines the appropriate Saturday delivery rate for the particular Carrier/Service 165.

Next, the System determines whether the shipping timespan ends on a Sunday 168. If the shipping timespan ends on a Sunday, the System accesses the Carrier Database (404a through 404n) to determine whether the particular Carrier/Service supports Sunday delivery 166. If the particular Carrier/Service does not support Sunday delivery, then the particular Carrier/Service is eliminated from the delivery rate set 177 and the System proceeds with the next Carrier/Service in the delivery rate set 157.

If the particular Carrier/Service supports Sunday Delivery, the System determines the appropriate Sunday delivery rate for the particular Carrier/Service 167.

The System then determine whether there is a business day delivery within the shipping timespan 169. If so, the System accesses the Carrier Database (404a through 404n) to determine whether the particular Carrier/Service supports business day delivery 170. If the particular Carrier/Service does not support business day delivery, then the particular Carrier/Service is eliminated from the delivery rate set 177 and the System proceeds with the next Carrier/Service in the delivery rate set 157.

If the particular Carrier/Service supports business day delivery, the System determines the appropriate business day delivery rate for the particular Carrier/Service 171.

The System next determines whether the Shipper has requested E-Mail delivery notification 172. If so, the System accesses the Carrier Database (404a through 404n) to determine whether the particular Carrier/Service supports E-Mail delivery notification 173. If the particular Carrier/Service does not support E-Mail delivery notification, then the

particular Carrier/Service is eliminated from the delivery rate set 177 and the System proceeds with the next Carrier/Service in the delivery rate set 157.

If the particular Carrier/Service supports E-Mail delivery notification, the System adds the appropriate charge for the E-Mail delivery notification service to each of the particular Carrier/Service's delivery rates 174.

The System then determines whether the Shipper has requested verbal delivery notification 175. If so, the System accesses the Carrier Database (404a through 404n) to determine whether the particular Carrier/Service supports verbal delivery notification 176. If the particular Carrier/Service does not support verbal delivery notification, then the particular Carrier/Service is eliminated from the delivery rate set 177 and the System proceeds with the next Carrier/Service in the delivery rate set 157.

If the particular Carrier/Service supports verbal delivery notification, the System adds the appropriate charge for the verbal delivery notification service to each of the particular Carrier/Service's delivery rates 178.

Next 179, the System determines whether the Shipper has requested that the Carrier/Service guarantee delivery time 180. If so, the System accesses the Carrier Database (404a through 404n) to determine whether the particular Carrier/Service supports guaranteed delivery times 181. If the particular Carrier/Service does not support guaranteed delivery times, then the particular Carrier/Service is eliminated from the delivery rate set 177 and the System proceeds with the next Carrier/Service in the delivery rate set 157.

If the particular Carrier/Service supports guaranteed delivery times, the System adds the appropriate charge for the

guaranteed delivery times service to each of the particular Carrier/Service's delivery rates 182.

The System then determines whether the Shipper has requested a "Call for Pickup" shipping location 184. If so, the System accesses the Carrier Database (404a through 404n) to determine whether the particular Carrier/Service supports "Call for Pickup" services 185. If the particular Carrier/Service does not support "Call for Pickup" services, then the particular Carrier/Service is eliminated from the delivery rate set 177 and the System proceeds with the next Carrier/Service in the delivery rate set 157.

If the particular Carrier/Service supports "Call for Pickup" services, the System adds the appropriate charge for the "Call for Pickup" service to each of the particular Carrier/Service's delivery rates 186.

The System next determines whether the Shipper has requested a "Residential Delivery" 187. If so, the System accesses the Carrier Database (404a through 404n) to determine whether the particular Carrier/Service supports "Residential Delivery" services 188. If the particular Carrier/Service does not support "Residential Delivery" services, then the particular Carrier/Service is eliminated from the delivery rate set 177 and the System proceeds with the next Carrier/Service in the delivery rate set 157.

If the particular Carrier/Service supports "Residential Delivery" services, the System adds the appropriate charge for the "Residential Delivery" service to each of the particular Carrier/Service's delivery rates 189.

The System then determines whether the Shipper has requested a "Loss Protection" services 190. If so, the System accesses the Carrier Database (404a through 404n) to determine whether the particular Carrier/Service supports "Loss Protection" services 191. If the particular Carrier/Service

does not support "Loss Protection" services, then the particular Carrier/Service is eliminated from the delivery rate set 177 and the System proceeds with the next Carrier/Service in the delivery rate set 157.

If the particular Carrier/Service supports "Loss Protection" services, the System calculates the appropriate charge for the "Loss Protection" service and adds the appropriate charge to each of the particular Carrier/Service's delivery rates 193 before proceeding with the next Carrier/Service in the delivery rate set 157.

4) AUTOMATIC DYNAMIC REGENERATION OF DISPLAY

As was mentioned above, in the embodiment of the invention depicted in FIGS. 12a through 12c, in the initial development of the Graphic Array, the System distributes the development functions as follows: the Shipper entering shipping information 150, displaying errors to the Shipper that insufficient shipping information has been provided and prompting the Shipper for additional information 153, and displaying the Graphic Array 160, are all processed by the Web Browser at the Client; all other functions and processes depicted in FIGS. 12a through 12c are performed by one or more of the NOC Servers 10-16.

In one embodiment of the invention, the System automatically and dynamically regenerates the display of the Graphic Array and certain portions of other screens when the Shipper makes online changes to Shipper input. To do this, the System generates executable code which it distributes with certain displayable frames to the Web Browser Client. Distribution of executable code that regenerates the Graphic Array to the Web Browser Client provides the capability to dynamically reflect in the Graphic Array any changes that the Shipper may enter to the various Shipper Parcel

Specifications; the Graphic Array immediately displays the new information without requiring the Shipper to request a recalculation, such as by clicking on a "Regenerate" button or the like.

A displayable frame is a set of information for display on the client display device. For example, in FIG. 1, in one embodiment of the invention, a first frame of the screen depicted in FIG. 1 comprises the Title "Rates & Times" 109a, the instruction "Click on the price to select a delivery date, time and carrier." 109b, the legend "Date you expect to ship your package:" 109c, the input field for the Expected Shipping Date 60, the legend "I'll ship the package from:" 109d and the input field for the Shipping Location 66; a second frame of the screen depicted in FIG. 1 comprises the Graphic Array.

As the System generates the display of each frame, the System generates executable code which it distributes with the frame to the Web Browser Client. Thereafter, the Web Browser Client uses the executable code to automatically regenerate the display of the Graphic Array each time the Shipper makes changes to the Shipper Parcel Specifications. In one embodiment of the dynamic regeneration aspect of the invention, the executable code distributed to the Web Browser Client uses JavaScript.

In some cases, the executable code sent to the Web Browser Client provides the information and the capability to regenerate the Graphic Array without any further communication with the Server. In other cases, the Web Client Browser must return control to the Server so that the Server can access data maintained by or accessible by the Server; the Server then regenerates the Graphic Array or otherwise provides the Web Browser Client with the information necessary to regenerate the Graphic Array.

In an exemplary embodiment of the automatic dynamic regeneration aspect of the invention, the executable code distributed to the Web Browser Client contains the logic to apply Carrier Rules to Shipper Parcel Specification changes. For instance, Shipper changes to the Service Options screen as depicted in FIG. 6 would be automatically processed by the Web Client Browser and the Web Client Browser would regenerate the Single Day Rate Graphic Array depicted therein to reflect the Shipper changes. In one such automatic dynamic regeneration embodiment, only those functions that do not require further access to the relevant Carrier's database are distributed to the Web Browser Client.

It should be noted that, according to the automatic dynamic regeneration aspect of the invention, if after the Shipper views the Graphic Array the Shipper enters changes to any of the factors with which the System calculates the rates and develops the Graphic Array, the System uses a similar logic flow to regenerate the Graphic Array as was explained above in relation to FIGS. 12a through 12c.

The dynamic regeneration capability is used to automatically regenerate response screens in many places throughout the System. For instance, as was mentioned above, as in the case of FIG. 1, if the Shipper changes Origin Zip Code and/or Ship Location Type, the System will automatically regenerate a list of possible Drop Off Location choices.

5) PRINTING SHIPPING LABELS AND DIMENSIONALLY ACCURATE IMAGES

Once the Shipper selects a particular Graphic Array Carrier cell element, the System then processes the Shipper's shipping transaction using Shipper information from the Shipper Database 195 and information for the Selected Carrier from the Carrier Database 404a through 404n.

As mentioned above, in some embodiments, the Shipper can use the system to locally print on the Shipper's printer device a bar-coded shipping label according the Selected Carrier's certification standards. In some embodiments, the bar-coded shipping label can be printed on either a thermal label printer or on a laser printer. The Shipper specifies the type of printer to the system during initial setup procedures. Thereafter, the System uses, as appropriate, the thermal printer or laser printer module to prepare the label image for printing on the Shipper's printer.

FIG. 13a depicts a flow diagram of one embodiment of the aspect of the invention that provides printing of bar-coded shipping labels on printer devices which are compatible with the client system on which the web browser is running, such as an HP-compatible laser printer. As depicted in FIG. 13a, one of the NOC Servers, for instance, the Shipping Server 14, gets the Label Size from the Carrier Label Specification 250, the Label Layout from the Carrier Label Specification 251, Label Data from the Shipper Database 252, and the Label Quality in Dots Per Inch ("DPI") as set by the Server 253, and uses this information to Generate the Label 254.

The Server then creates, and causes the display on the client browser's display device of, a text string with a specified font face and in a specified font size in an HTML table data cell with a specified width 255. If the client browser is using a 96 display device DPI, the display device will display said text string in the HTML table data cell in a single line. If on the other hand, the client browser is using a 120 display device DPI, the display device will display said text string in the HTML table data cell in two lines.

In creating the display of the text string, the Server also sends a message to the Shipper asking the Shipper to

answer the following question: do you see the text string displayed on your screen as a single line or as wrapped text in multiple lines? The Server receives the Shipper's response and determines from the response whether the Shipper's display device has displayed the text as a single line or as wrapped text in multiple lines 256. If the text is displayed as a single line, then the client browser 257 display device DPI is 120. Otherwise, the client browser 258 display device DPI is 96.

Next, the Server calculates the shipping label HTML image size in pixels 259 by multiplying the Carrier-specified label size from the Carrier Label Specification times the client browser display device DPI as determined by the previous step.

Next, the System displays the generated label image in the client browser 260 with an HTML image tag and an HTML image size in pixels as calculated in the prior step.

The client browser calculates the size of the label to be printed in inches by dividing the label HTML image size in pixels as calculated in a prior step by the client browser display device DPI 261; the client browser then prints out the label with the size calculated 261.

FIG. 13b depicts a flow diagram of an exemplary embodiment of the aspect of the invention that provides printing of dimensionally accurate images, such as dimensionally sensitive symbologies including two-dimensional bar codes and other two-dimensional machine readable symbologies. This aspect of the invention provides the printing of such dimensionally accurate images on various types of printer devices including among others HP-compatible laser printers. The printer devices can be configured with remote computers, such as PC's, that will receive signals to print the dimensionally accurate image over a communications network such as the Internet. Each PC having a client browser

or executing like software, and each PC being configured with a pre-established Image Resolution that applies to the display device and the printer device configured with the PC.

As depicted in FIG. 13b, a computer, such as Server 14, determines the Image Size 350, the Image Layout 351, any relevant Image Data 352, and the Image Resolution in Dots Per Inch ("DPI") or in any other measure of Image Resolution 353. The Server 14 uses this information to Generate the Image 354.

Alternatively, the Image has previously been created; the Server 14 determines from the Image, the Image Size 350, the Image Layout 351, any relevant Image Data 352, and the Image Resolution in DPI or in any other measure of Image Resolution 353 (collectively referred to hereinafter as the "Image Characteristics").

The Server 14 determines the possible Image Resolution Categories and associated values of client PC's 354. Image Resolution Categories and associated values include information such as the number of text strings, and the length of and characteristics (font face, font size, and HTML table cell width) of each of the identified number of, text strings that must be used to determine the Image Resolution of client display devices 356.

An HTML table cell width is fixed in that the physical width of the display of the HTML table cell does not change depending upon the resolution of the client device; a text string comprised of characters having a particular font and font size has a scalable width, depending upon the resolution of the client device resolution. Use of an HTML table cell to measure the resolution of client devices is not a limitation of the invention. In an alternative embodiment, a graphic element other than an HTML table cell, having a fixed width, is used to measure the resolution of client devices.

The possible Image Resolution Categories and values are stored in the memory of the Server 14 and updated on some basis. In an alternative embodiment, the possible Image Resolution Categories and values are input into the Server computer.

The Server 14 then analyzes the Image Characteristics, and the possible Image Resolution categories and/or values 355, and creates the appropriate number of text strings and associated HTML table cells 356. Each text string is created to have a specified font face, a specified font size, and an associated HTML table cell with a specified width 357. The computer then causes the display of the text strings in the associated HTML table cells on the remote client PC's display device 358.

In creating the display of the text string, the Server also sends a message to the recipient PC asking the user to answer the following question: is the first text string displayed on your screen as a single line or as wrapped text in multiple lines? The Server 14 receives the remote user's response and determines from the response whether the remote user's PC's display device has displayed each of the text strings as a single line or as wrapped text in multiple lines 256. The Server 14 then sets the PC's Remote Image Resolution for printing the Image 359 according to the results of the user's PC's display of the text strings.

Next, the Server calculates the Remote HTML Image Size in pixels 360 by multiplying the Image Size times the PC's Remote Image Resolution as determined by the previous step.

Next, the Server displays the generated image on the display device of the remote PC 361 with an HTML image tag and the Remote HTML Image Size in pixels as calculated in the prior step.

The client browser of the remote PC calculates the size of the Image to be printed ("Remote Print Image Size") in inches by dividing the Remote HTML Image Size in pixels by the Remote Image Resolution 362; the client browser then prints out the Image with the Remote Print Image Size 362.

6) SYSTEM ARCHITECTURE

An overview of an exemplary System architecture is depicted in FIG. 14. The overview depicted is exemplary and meant to be illustrative; it is not a limitation of the invention. As depicted in FIG. 14, one embodiment of the invention uses a three-tiered architecture.

The Data Management Tier 201 is comprised of a Database Storage component 202 that in the embodiment depicted uses an SQL Server; a Message Queue Storage component 203 that in the embodiment depicted uses MS Message Queue; and a File Storage component 204 that in the embodiment depicted uses NTFS, and DFS. Each of the Database Storage component 202, the Message Queue Storage component 203, and the File Storage component 204, communicate with the Component Tier 208 of the System architecture, communications by each component with the Component Tier 208 represented by elements 205, 206 and 207 respectively. According to the embodiment depicted in FIG. 14, the Server Components of the Component Tier 208 use C++ programming language and COM Objects.

The Application Tier 212 of the System Architecture is comprised of a Web Shipper Client component 213 (which uses HTML, ASP and JavaScript), the NOC Administration component 214 (which uses HTML, ASP, VB, and C++), and the Web Shipping Station component 215 (which uses HTML, ASP, JavaScript, C++, and ActiveX Controls). Each of the Web Shipper Client component 213, the NOC Administration component 214, and the Web Shipping Station component 215 communicate with the Server

Components of the Component Tier 208 as represented by the communication elements 209, 210 and 211 respectively.

In one embodiment, the System is implemented in an NT environment. The description of the System as being implemented in an NT environment is exemplary and is not a limitation of the invention.

## ILLUSTRATIVE EMBODIMENTS

Although this invention has been described in certain specific embodiments, many additional modifications and variations would be apparent to those skilled in the art. It is, therefore, to be understood that this invention may be practiced otherwise than as specifically described. Thus, the embodiments of the invention described herein should be considered in all respects as illustrative and not restrictive, the scope of the invention to be determined by the appended claims and their equivalents rather than the foregoing description.

WHAT IS CLAIMED IS:

1. A computer system programmed for displaying on a display screen one or more prices, dates and times of delivery for a parcel that may be shipped by a plurality of carriers,

the display screen comprising, as displayed thereon, an array of intersecting rows and columns and comprising along each column, a different one of a plurality of dates of parcel delivery, along each row a different one of a plurality of times of parcel delivery and at each of a plurality of the intersections, coded to represent a different one of said carriers, a monetary amount for the date of delivery along the corresponding column and the time of delivery along the corresponding row.

2. A computer system programmed according to Claim 1 for displaying on said screen a representation of each of said carriers that are represented in said display.

3. A computer system programmed according to Claim 2 for displaying on said screen in a different unique color each said representation of a carrier and each monetary amount coded to represent such carrier.

4. A method using a computer for printing on a client printer a dimensionally accurate print image of a source image, wherein the client printer is configured with a client PC, and wherein the client PC is configured with a display device, a web browser, and a configured display resolution, the method comprising the steps of:

creating a graphic element with a fixed width;

creating a scalable character string that fits within a display of the graphic element as a single line in a particular display device resolution;

displaying on the remote display screen the scalable character string inside the display of the graphic element;

determining the configured display resolution of the display device;

generating an image in a size that is printable by the the web browser.

5. The method of Claim 4 wherein the scalable character string comprises one or more characters having a particular font face and a particular font size.

6. The method of Claim 5 wherein the graphic element is an HTML table cell.

7. The method of Claim 6 wherein the configured display resolution is measured in Dots Per Inch ("DPI").

8. A method using a server computer for printing dimensionally accurate shipping labels on a remote printer configured to a remote personal computer, said personal computer having a client browser, a display device and a printing device, the method comprising:

receiving as input an identifier for a particular carrier;

determining an approved label size, an approved label layout, and an approved label quality in Dots Per Inch ("DPI") for a particular carrier;

receiving as input a set of label data from a shipper;

generating a label according to the approved label size, the approved label layout, and the approved label quality in Dots Per Inch ("DPI") for the particular carrier;

creating a text string with a specified font face and in a specified font size in an HTML table data cell with a specified width;

causing the text string to be displayed on the remote personal computer's display device;

determining whether the text string is displayed on the remote personal computer's display device as a single line or as wrapped text in multiple lines;

for a remote display device that displays the text string as a single line, setting then the display device DPI to 120;

for a remote display device that displays the text string as wrapped text in multiple lines, setting the display device DPI to 120;

calculating a shipping label HTML image size in pixels by multiplying the Label Size times the display device DPI;

displaying the generated label image on the display device using the client browser, wherein said generated label image having an HTML image tag and an HTML image size in pixels;

using the client browser, calculating the size of the label to be printed in inches by dividing the label HTML image size in pixels by the display device DPI;

using the client browser, printing the label with the calculated size of the label to be printed.

9. A computer system programmed for generating for display on a display screen a first frame and a second frame,

the first frame comprising, displayed thereon, a set of options for user selection;

the second frame comprising, displayed thereon, an array of intersecting rows and columns and comprising along each column, a different one of a plurality of dates of parcel delivery, along each row a different one of a plurality of times of parcel delivery and at each of at least one of the intersections, coded to represent a different one of said carriers, at least one monetary amount for the date of delivery along the corresponding column and the time of delivery along the corresponding row.

10. A computer system programmed according to Claim 9, said first frame further comprising a first set of executable program code.

11. A computer system programmed according to Claim 10, said second frame further comprising a second set of executable program code.

12. A computer system programmed according to Claim 11 wherein said first set of executable program code capable of receiving as input user selections from said set of options.

13. A computer system programmed according to Claim 12 wherein the first set of executable code communicates said user input to said second set of executable program code in the second frame.

14. A computer system programmed according to Claim 13 wherein the second set of executable program code in the

second frame receives as input said user input communicated by said first set of executable code.

15. A computer system programmed according to Claim 14 wherein said second set of executable code regenerates said second frame based on said user input.

16. A computer system for providing a multi-carrier comparison of delivery rates and times for a particular subject parcel according to a set of shipper parcel specifications, the system comprising:

at least one of one or more server computers is programmed to receive as a set of input data a particular shipper's shipper parcel specifications for a particular subject parcel;

at least one of said Server computers is programmed to access one or more databases of carrier rules;

at least one of said server computers is programmed to process as a dynamically dimensioned set of potential shipping transactions said shipper's said shipper parcel specifications for said subject parcel according to said carrier rules;

at least one of said server computers is programmed to format for display the dynamically dimensioned set of potential shipping transactions for said Shipper for said subject parcel; and

at least one of said server computers is programmed to generate signals to display said formatted display of the dynamically dimensioned set of potential shipping transactions for said Shipper for said subject parcel to a display monitor for a personal computer.

17. The system of claim 16 wherein said formatted display of said dynamically dimensioned set of potential shipping transactions comprises:

an array of intersecting rows and columns and comprising along each column, a different one of a plurality of dates of parcel delivery, along each row a different one of a plurality of times of parcel delivery and at each of at least one of the intersections, coded to represent a different one of said carriers, at least one monetary amount for the date of delivery along the corresponding column and the time of delivery along the corresponding row.

18. A computer system for processing parcel shipping transactions through a choice from a carousel of one or more carriers, the system comprising:

at least one of one or more server computers wherein one or more of said server computers is configured to communicate through a global communications network with one or more personal computers;

wherein each of said personal computers is configured with a central processing unit, one or more shipper input devices, a communication device, and a display monitor, wherein said central processing unit is configured to communicate with each of said shipper input devices, with said communication device and with said display monitor and wherein said communication device is configured to communicate with said global communications network;

wherein at least one of said server computers is programmed to generate signals to one or more of said display monitors to request shipper input of each particular shipper's shipper parcel specifications;

wherein at least one of said server computers is programmed to receive as a set of input data a particular shipper's shipper parcel specifications for a particular subject parcel from each of one or more of said personal computers, to access one or more databases of carrier rules, to process as a dynamically dimensioned set of potential shipping transactions each set of a particular Shipper's said shipper parcel specifications for a subject parcel according to said carrier rules, to format for display each of the dynamically dimensioned sets of potential shipping transactions for said shipper for said subject parcel, and to generate signals to display each formatted display of the dynamically dimensioned set of potential shipping transactions for said shipper for said subject parcel to the display monitor for the personal computer from which the corresponding set of shipper parcel specifications for said subject parcel was received.

19. The system of claim 18 wherein said formatted display of said dynamically dimensioned set of potential shipping transactions comprises:

an array of intersecting rows and columns and comprising along each column, a different one of a plurality of dates of parcel delivery, along each row a different one of a plurality of times of parcel delivery and at each of at least one of the intersections, coded to represent a different one of said carriers, at least one monetary amount for the date of delivery along the corresponding column and the time of delivery along the corresponding row.

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# APPARATUS, SYSTEM, AND METHODS FOR ONLINE, MULTI-CARRIER PARCEL SHIPPING MANAGEMENT

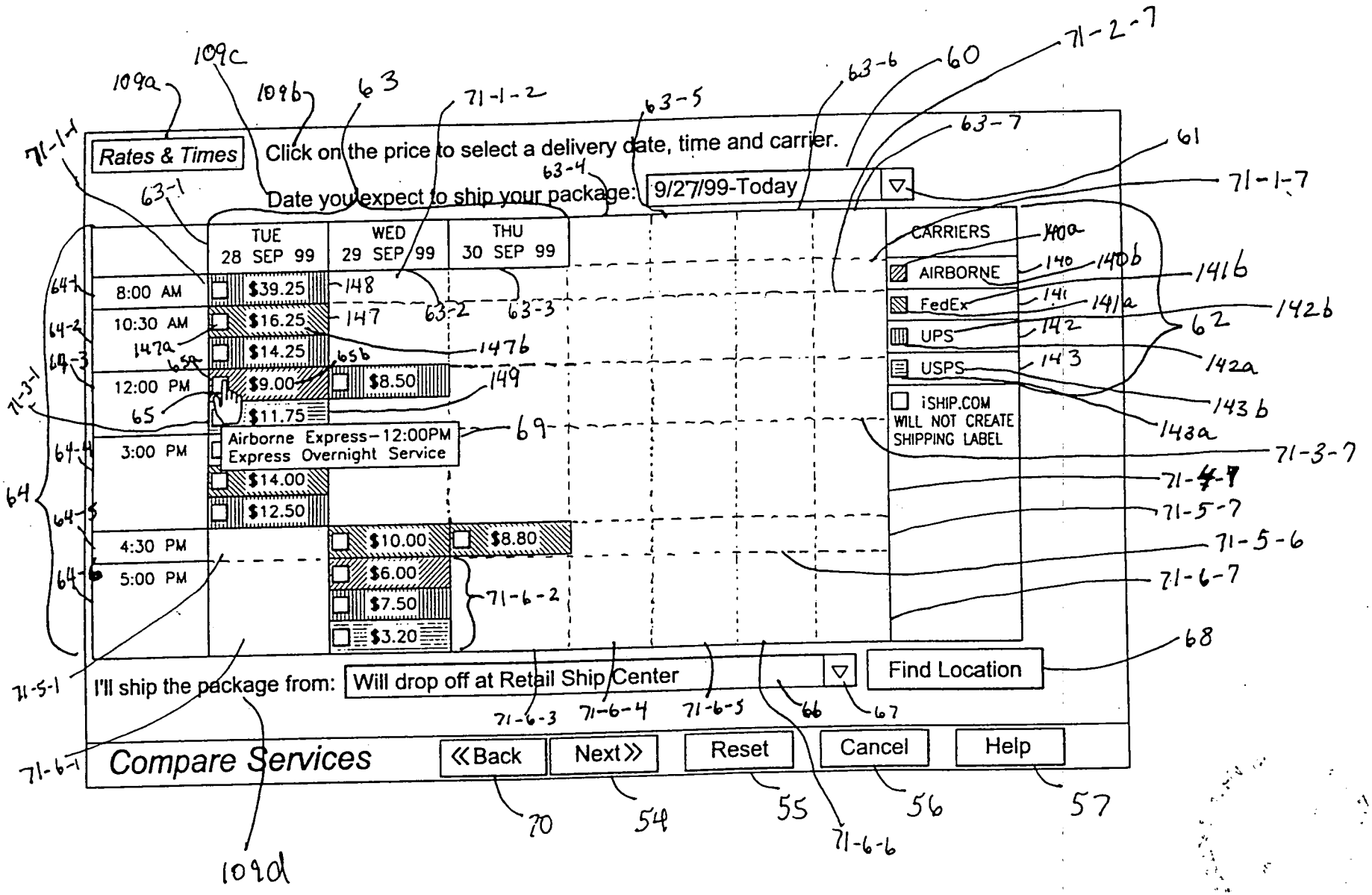
## ABSTRACT OF THE DISCLOSURE

The present invention utilizes a computer system (the "System") to provide Shippers with a single multi-Carrier shipping system that provides Shippers with a dynamically dimensioned online display comparison (the "Dynamically Dimensioned Multi-Carrier Graphic Array" online display) of the way in which the delivery of a particular subject parcel would be rated and scheduled for delivery by each of a multitude of Carriers. The Dynamically Dimensioned Multi-Carrier Graphic Array online display is constructed by the System in response to a particular Shipper's Parcel Specifications for a particular Subject Parcel. The System further provides individuals and businesses the ability to process their parcel shipping transactions through, among other ways, a Shipper-specified choice of a particular Carrier from the Dynamically Dimensioned Multi-Carrier Graphic Array online display. The System is connected to or otherwise capable of communicating through, a communications network such as a global communications network such as the Internet, which is in turn connected to, or capable of communicating with one or more Personal Computers ("PC") or other like devices.

According to some aspects of the invention, the System generates the signals to print a bar-coded shipping label on the Shipper's printer device, and records the shipping information for shipping tracking. The System, in some embodiments, supports the printing of bar-coded labels on either specialized thermal label printing devices or on laser printing devices.

DBP/MRK/srs

FIG. 1


Rates & Times
Click on the price to select a delivery date, time and carrier.
Date you expect to ship your package:
9/27/99-Today
TUE 28 SEP 99
WED 29 SEP 99
THU 30 SEP 99
8:00 AM
10:30 AM
12:00 PM
3:00 PM
4:30 PM
5:00 PM
$39.25
$16.25
$14.25
$9.00
$11.75
$8.50
$14.00
$12.50
$10.00
$8.80
$6.00
$7.50
$3.20
Airborne Express–12:00PM Express Overnight Service
CARRIERS
AIRBORNE
FedEx
UPS
USPS
iSHIP.COM WILL NOT CREATE SHIPPING LABEL
I'll ship the package from:
Will drop off at Retail Ship Center
Find Location
Compare Services
«Back
Next»
Reset
Cancel
Help
109a
109c
109b
63
71-1-2
63-5
63-6
60
71-2-7
63-7
61
71-1-7
71-1-1
63-1
63-4
148
147
63-2
63-3
147a
147b
65a
65b
65
149
69
71-3-1
71-3-7
64
64-1
64-2
64-3
64-4
64-5
64-6
71-4-7
71-5-7
71-5-6
71-6-7
71-6-2
71-5-1
71-6-1
71-6-3
71-6-4
71-6-5
66
67
68
70
54
55
56
57
71-6-6
109d
140a
140
140b
141b
141
141a
142
142b
62
142a
143
143b
148a

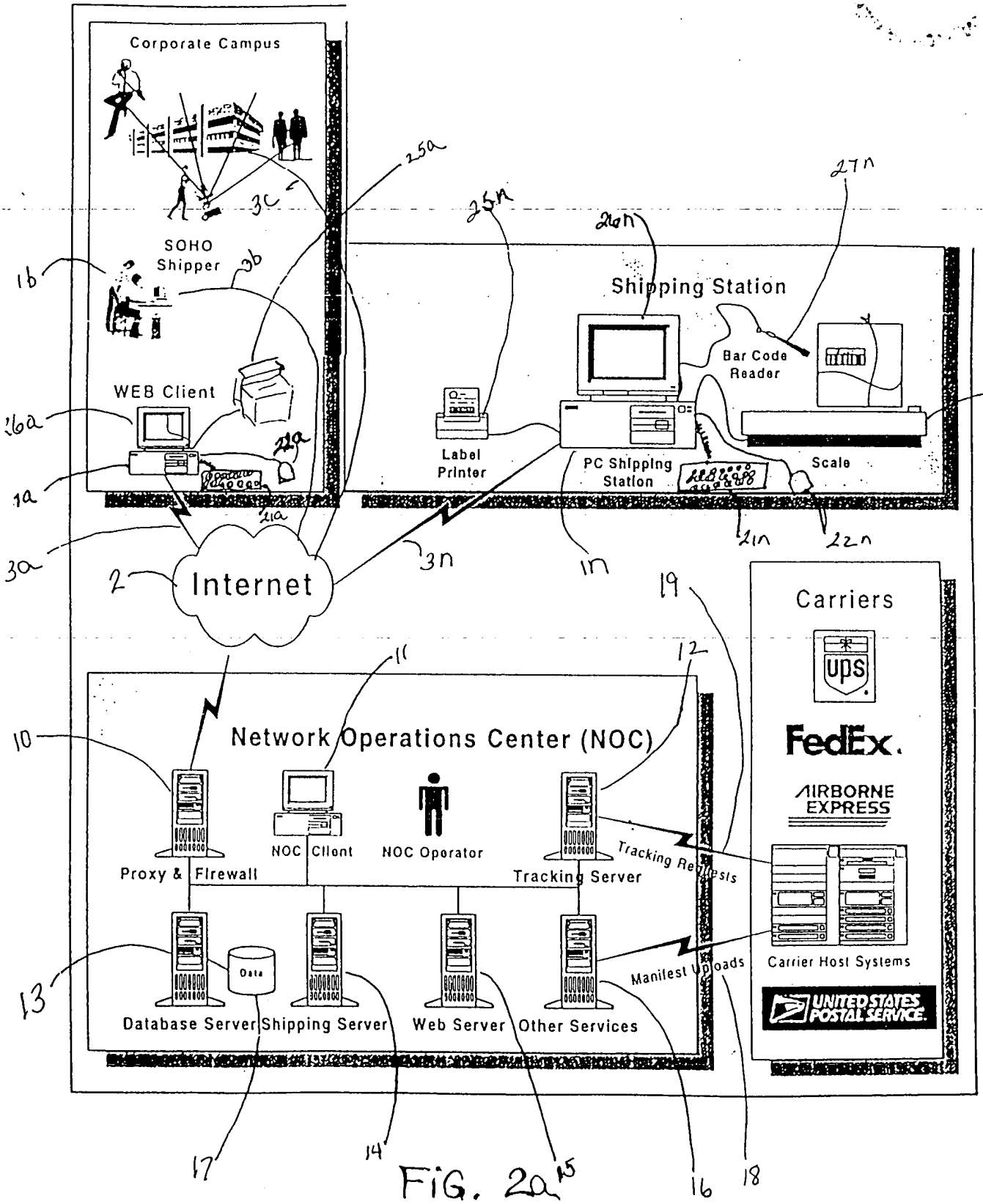

Corporate Campus
SOHO Shipper
WEB Client
Shipping Station
Bar Code Reader
Label Printer
PC Shipping Station
Scale
Internet
Carriers
ups
FedEx.
AIRBORNE EXPRESS
UNITED STATES POSTAL SERVICE
Network Operations Center (NOC)
Proxy & Firewall
NOC Client
NOC Operator
Tracking Server
Tracking Requests
Carrier Host Systems
Manifest Uploads
Data
Database Server
Shipping Server
Web Server
Other Services
1b
3b
3c
25a
25n
26n
27n
24n
16a
2a
1a
21a
3a
2
3n
1n
21n
22n
19
11
12
10
13
17
14
15
16
18

FIG. 2a

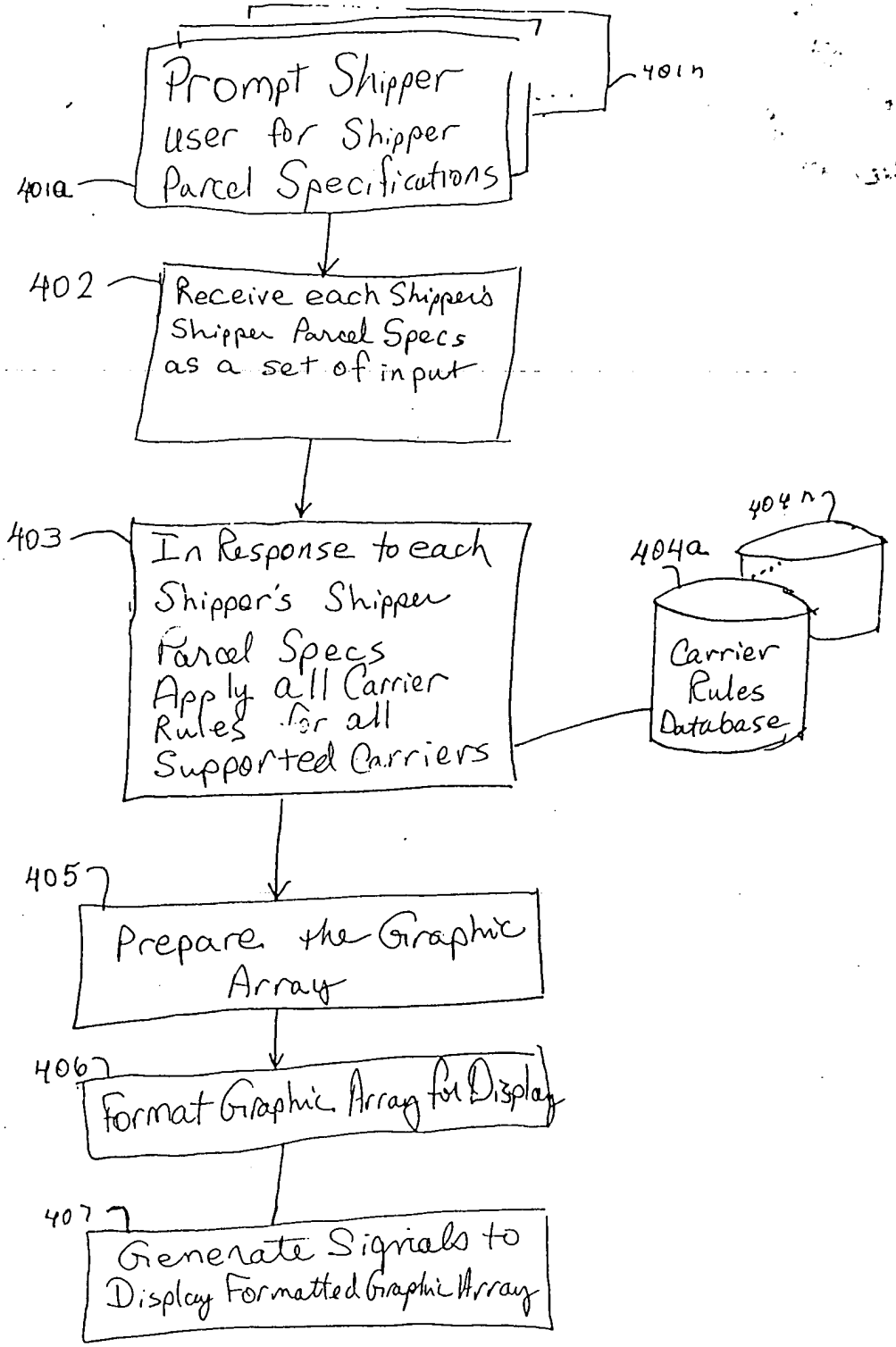

Prompt Shipper user for Shipper Parcel Specifications
401a
401n
402
Receive each Shipper's Shipper Parcel Specs as a set of input
403
In Response to each Shipper's Shipper Parcel Specs Apply all Carrier Rules for all Supported Carriers
404a
404n
Carrier Rules Database
405
Prepare the Graphic Array
406
Format Graphic Array for Display
407
Generate Signals to Display Formatted Graphic Array

FIG. 2b

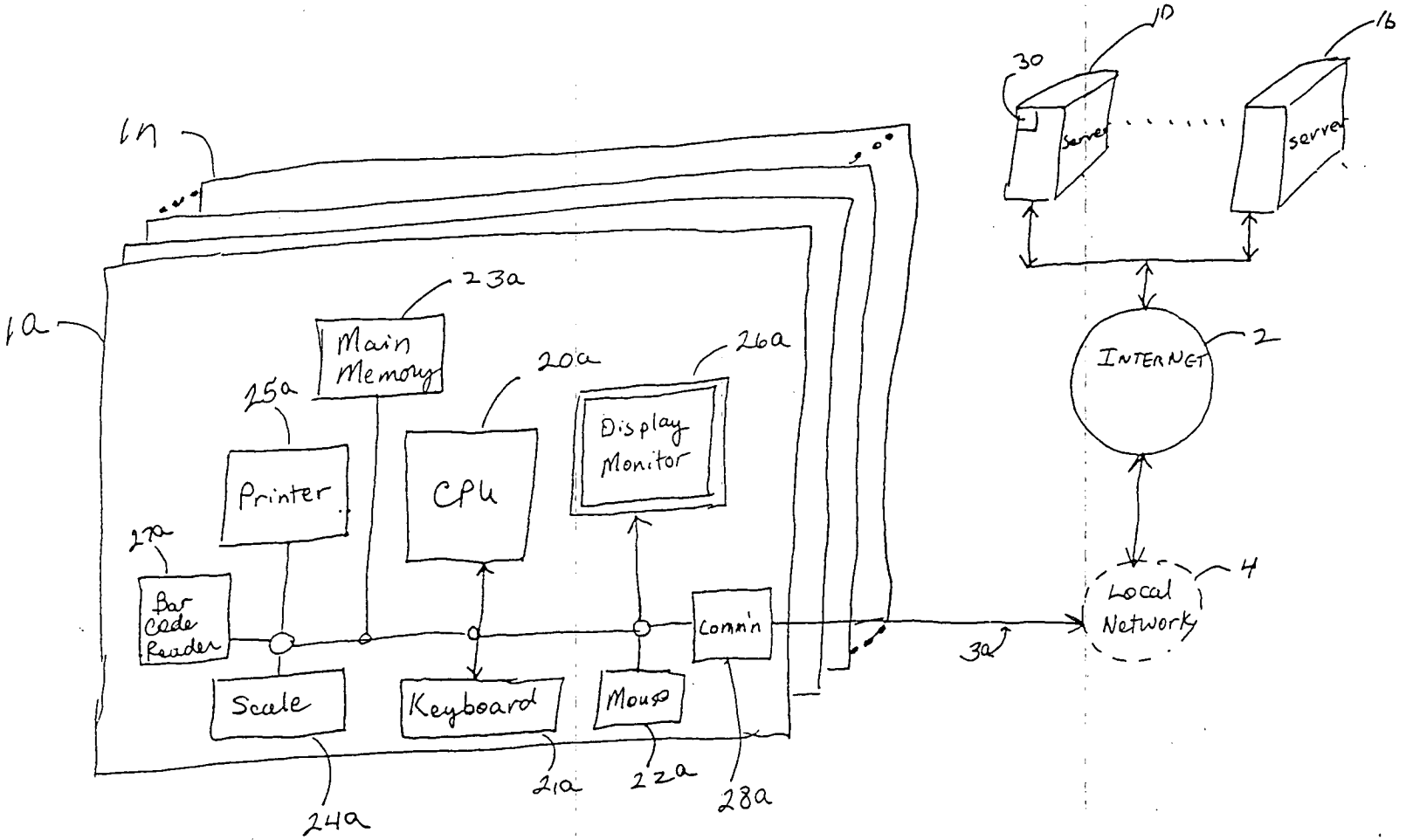

10
16
30
server
server
2
INTERNET
4
Local Network
3a
1n
1a
23a
Main Memory
25a
Printer
20a
CPU
26a
Display Monitor
27a
Bar Code Reader
Comm
Scale
Keyboard
Mouse
24a
21a
22a
28a

FIG. 3

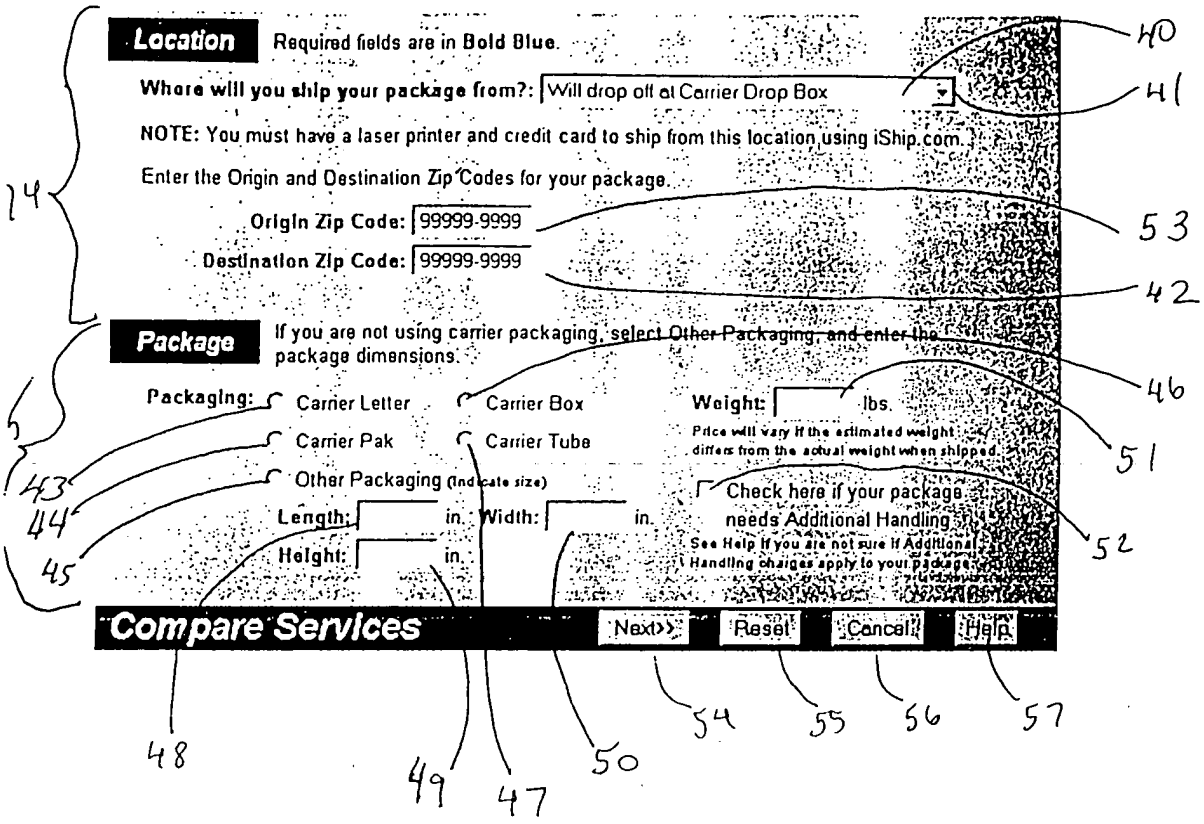

Location
Required fields are in Bold Blue.
Where will you ship your package from?:
Will drop off at Carrier Drop Box
NOTE: You must have a laser printer and credit card to ship from this location using iShip.com.
Enter the Origin and Destination Zip Codes for your package.
Origin Zip Code:
99999-9999
Destination Zip Code:
99999-9999
Package
If you are not using carrier packaging, select Other Packaging, and enter the package dimensions.
Packaging:
Carrier Letter
Carrier Box
Carrier Pak
Carrier Tube
Other Packaging (Indicate size)
Length:
in.
Width:
in.
Height:
in.
Weight:
lbs.
Price will vary if the estimated weight differs from the actual weight when shipped.
Check here if your package needs Additional Handling
See Help if you are not sure if Additional Handling charges apply to your package.
Compare Services
Next>>
Reset
Cancel
Help
14
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57

FIG. 4

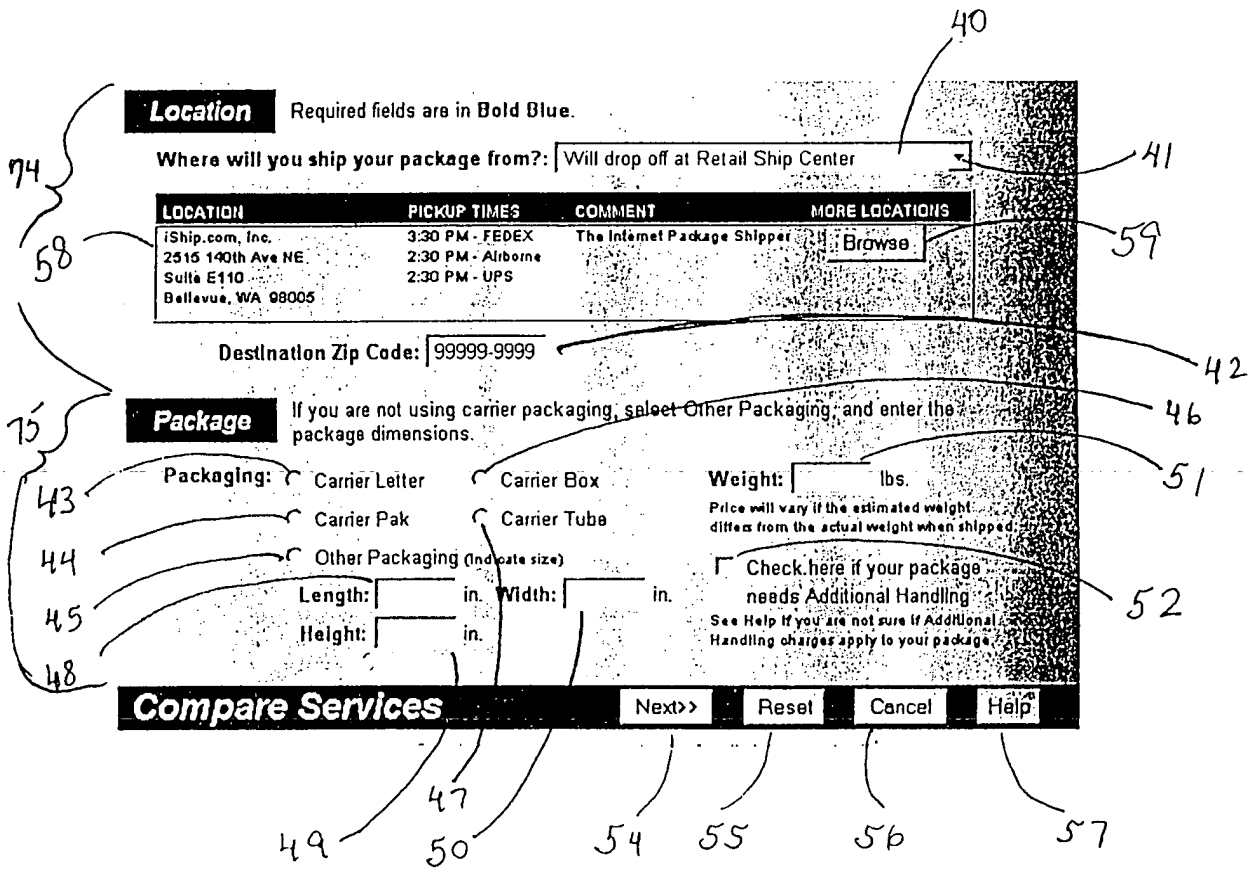
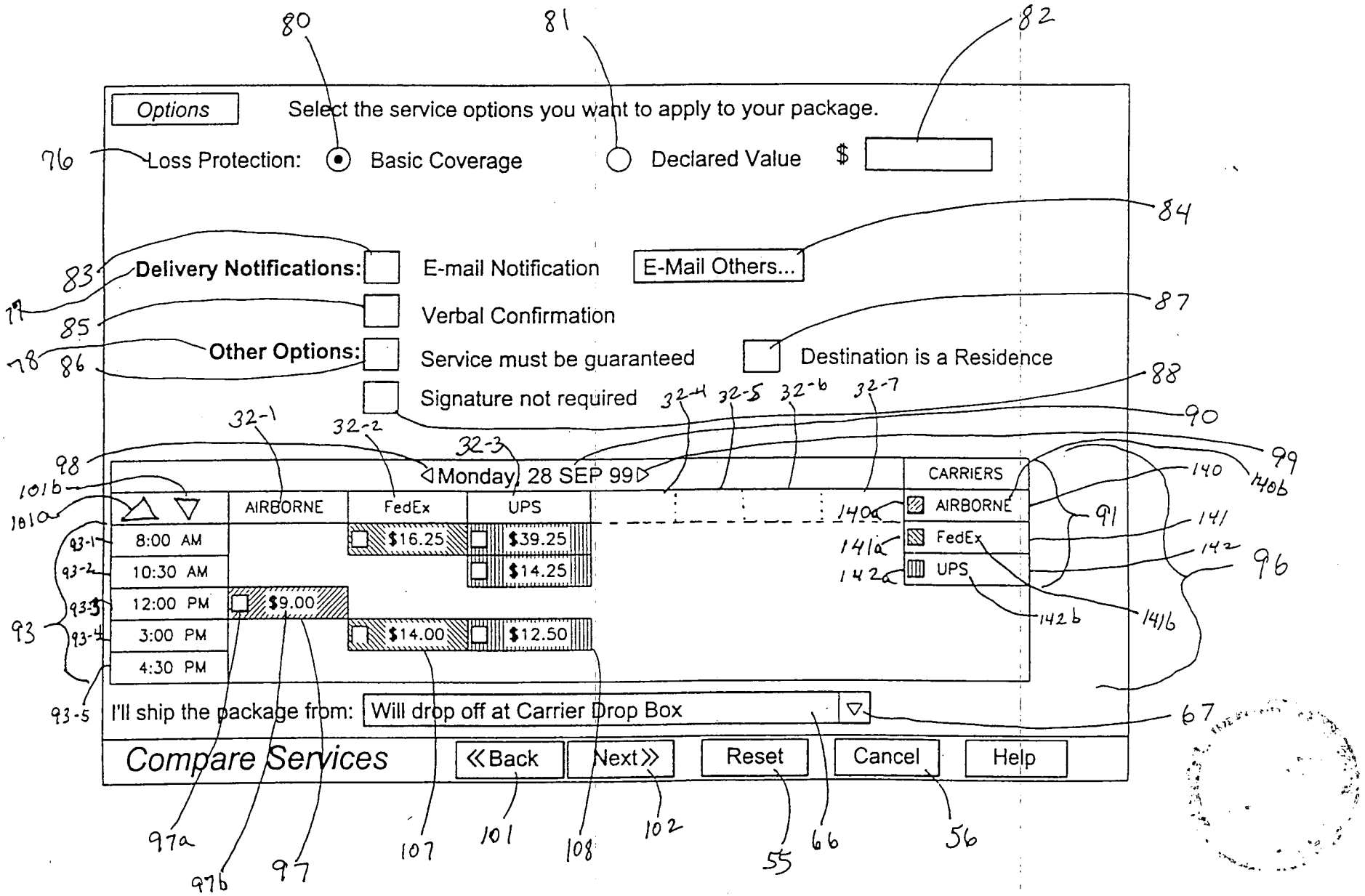

Location
Required fields are in Bold Blue.
Where will you ship your package from?:
Will drop off at Retail Ship Center
LOCATION
PICKUP TIMES
COMMENT
MORE LOCATIONS
iShip.com, Inc.
2515 140th Ave NE
Suite E110
Bellevue, WA 98005
3:30 PM - FEDEX
2:30 PM - Airborne
2:30 PM - UPS
The Internet Package Shipper
Browse
Destination Zip Code:
99999-9999
Package
If you are not using carrier packaging, select Other Packaging, and enter the package dimensions.
Packaging:
Carrier Letter
Carrier Box
Carrier Pak
Carrier Tube
Other Packaging (Indicate size)
Length:
in.
Width:
in.
Height:
in.
Weight:
lbs.
Price will vary if the estimated weight differs from the actual weight when shipped.
Check here if your package needs Additional Handling
See Help if you are not sure if Additional Handling charges apply to your package.
Compare Services
Next>>
Reset
Cancel
Help
40
41
42
43
44
45
46
47
48
49
50
51
52
54
55
56
57
58
59
74
75

FIG. 5

FIG. 6


Options
Select the service options you want to apply to your package.
Loss Protection:
Basic Coverage
Declared Value
$
Delivery Notifications:
E-mail Notification
E-Mail Others...
Verbal Confirmation
Other Options:
Service must be guaranteed
Destination is a Residence
Signature not required
Monday, 28 SEP 99
AIRBORNE
FedEx
UPS
8:00 AM
10:30 AM
12:00 PM
3:00 PM
4:30 PM
$16.25
$39.25
$14.25
$9.00
$14.00
$12.50
CARRIERS
AIRBORNE
FedEx
UPS
I'll ship the package from:
Will drop off at Carrier Drop Box
Compare Services
«Back
Next»
Reset
Cancel
Help
80
81
82
83
84
85
86
87
88
90
91
93
96
97
97a
97b
98
99
101
101a
101b
102
107
108
140
140a
140b
141
141a
142
142a
142b
141b
55
56
66
67
76
78

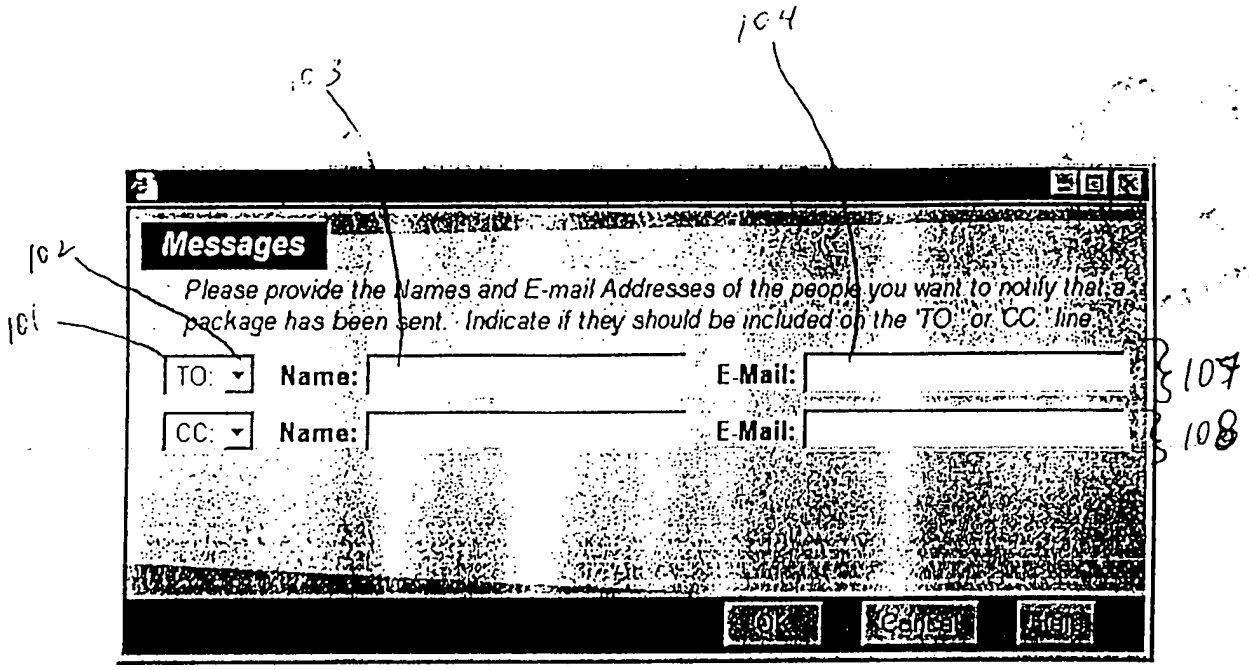

103
104
102
101
Messages
Please provide the Names and E-mail Addresses of the people you want to notify that a package has been sent. Indicate if they should be included on the 'TO:' or 'CC:' line.
TO:
Name:
E-Mail:
CC:
Name:
E-Mail:
107
108
OK
Cancel
Help

FIG. 7

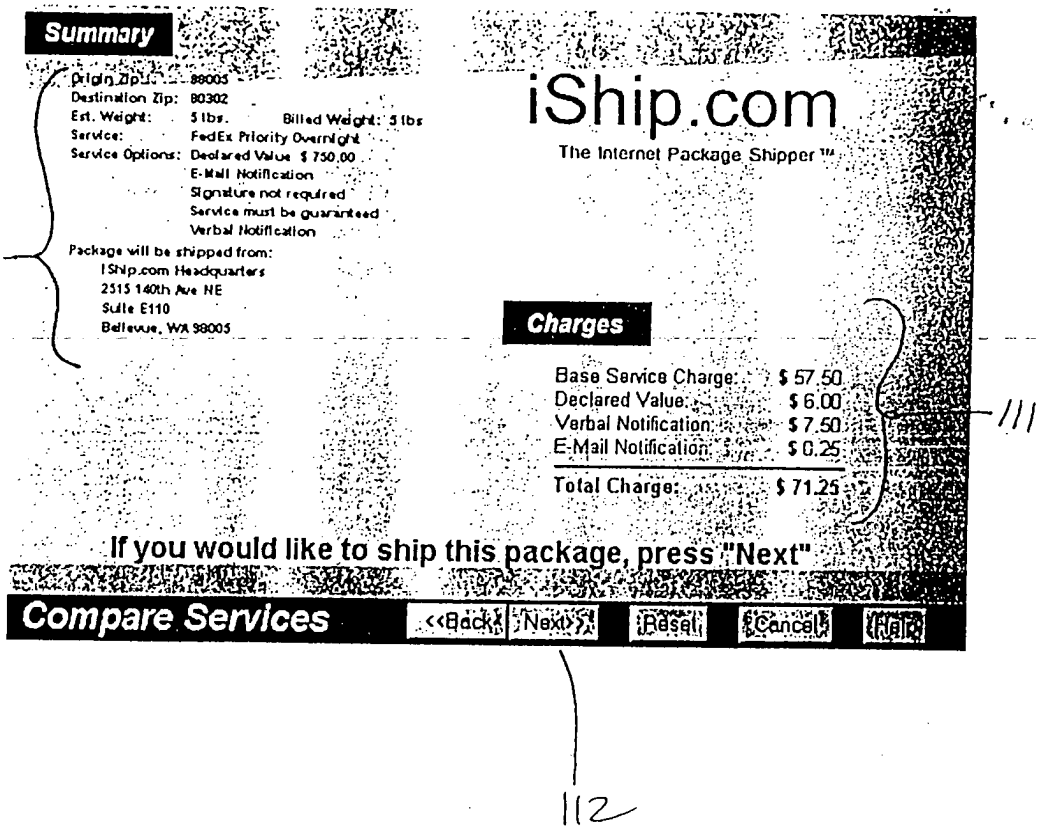

Summary
Origin Zip: 98005
Destination Zip: 80302
Est. Weight: 5 lbs. Billed Weight: 5 lbs
Service: FedEx Priority Overnight
Service Options: Declared Value $ 750.00
E-Mail Notification
Signature not required
Service must be guaranteed
Verbal Notification
Package will be shipped from:
IShip.com Headquarters
2515 140th Ave NE
Suite E110
Bellevue, WA 98005
iShip.com
The Internet Package Shipper™
Charges
Base Service Charge: $ 57.50
Declared Value: $ 6.00
Verbal Notification: $ 7.50
E-Mail Notification: $ 0.25
Total Charge: $ 71.25
If you would like to ship this package, press "Next"
Compare Services
<<Back
Next>>
Reset
Cancel
Help
110
111
112

FIG. 8

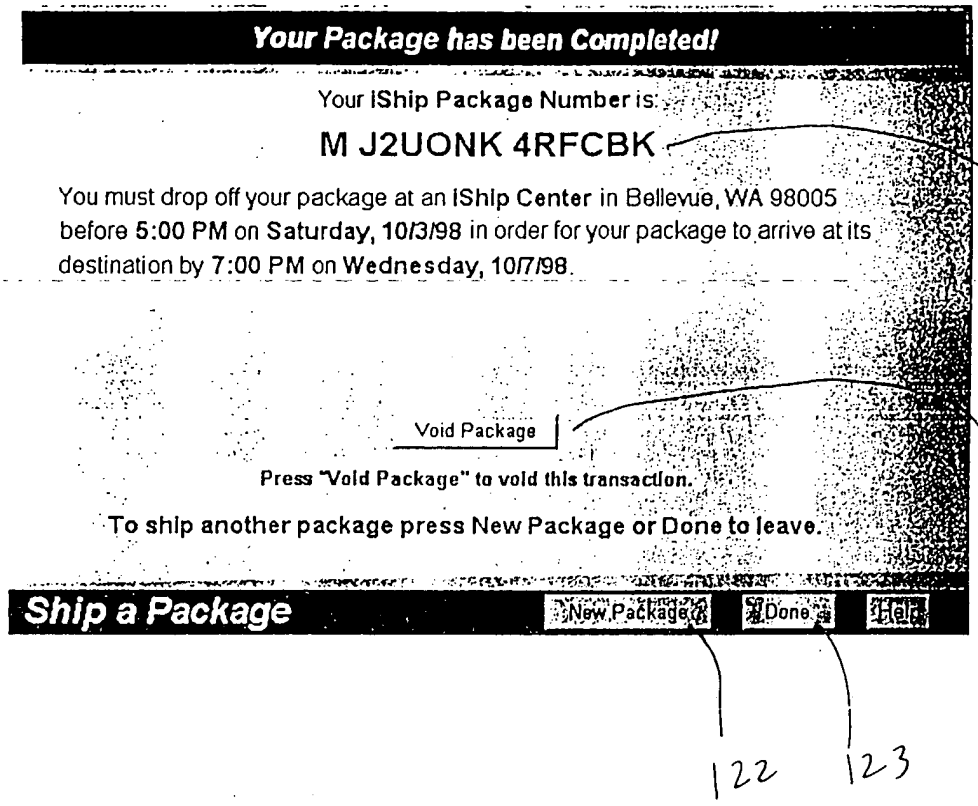

Your Package has been Completed!
Your IShip Package Number is:
M J2UONK 4RFCBK
You must drop off your package at an IShip Center in Bellevue, WA 98005 before 5:00 PM on Saturday, 10/3/98 in order for your package to arrive at its destination by 7:00 PM on Wednesday, 10/7/98.
Void Package
Press "Void Package" to void this transaction.
To ship another package press New Package or Done to leave.
Ship a Package
New Package
Done
Help
120
121
122
123

FIG. 9

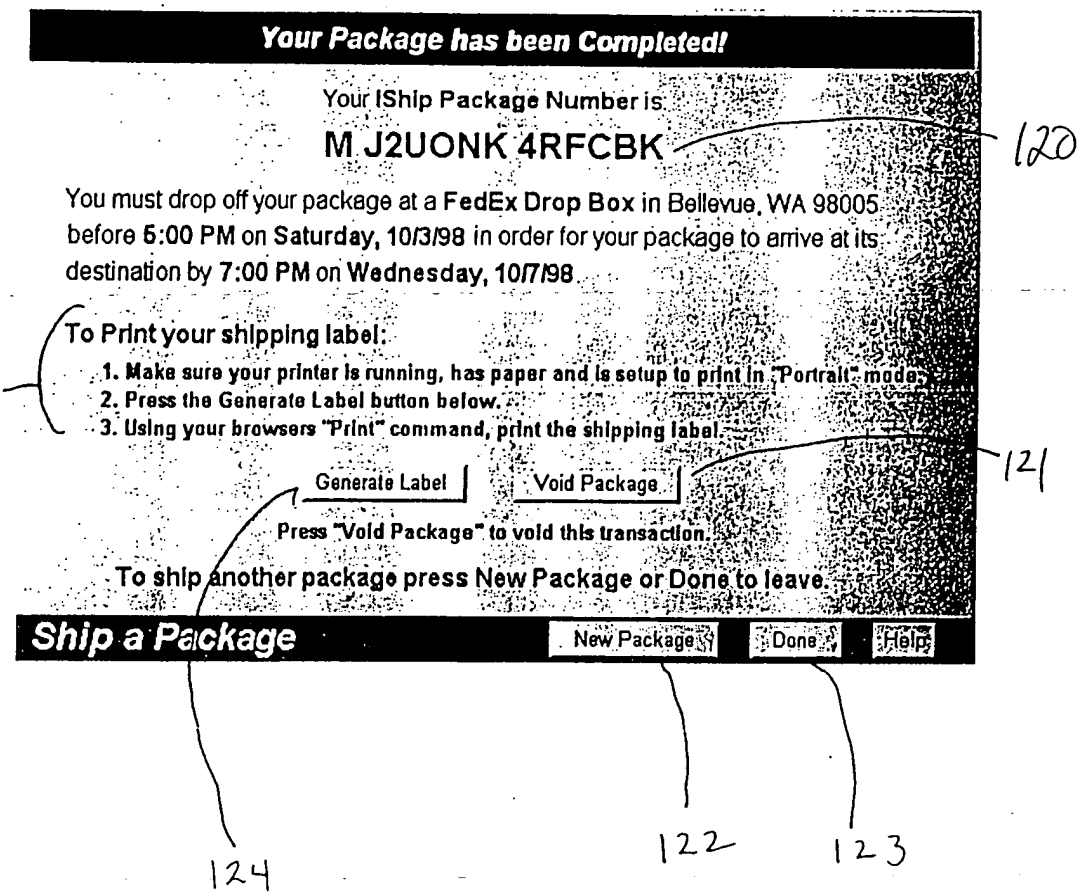

Your Package has been Completed!
Your IShip Package Number is:
M J2UONK 4RFCBK
120
You must drop off your package at a FedEx Drop Box in Bellevue, WA 98005 before 5:00 PM on Saturday, 10/3/98 in order for your package to arrive at its destination by 7:00 PM on Wednesday, 10/7/98.
To Print your shipping label:
1. Make sure your printer is running, has paper and is setup to print in "Portrait" mode.
2. Press the Generate Label button below.
3. Using your browsers "Print" command, print the shipping label.
125
Generate Label
Void Package
121
Press "Void Package" to void this transaction.
To ship another package press New Package or Done to leave.
Ship a Package
New Package
Done
Help
124
122
123

FIG. 10

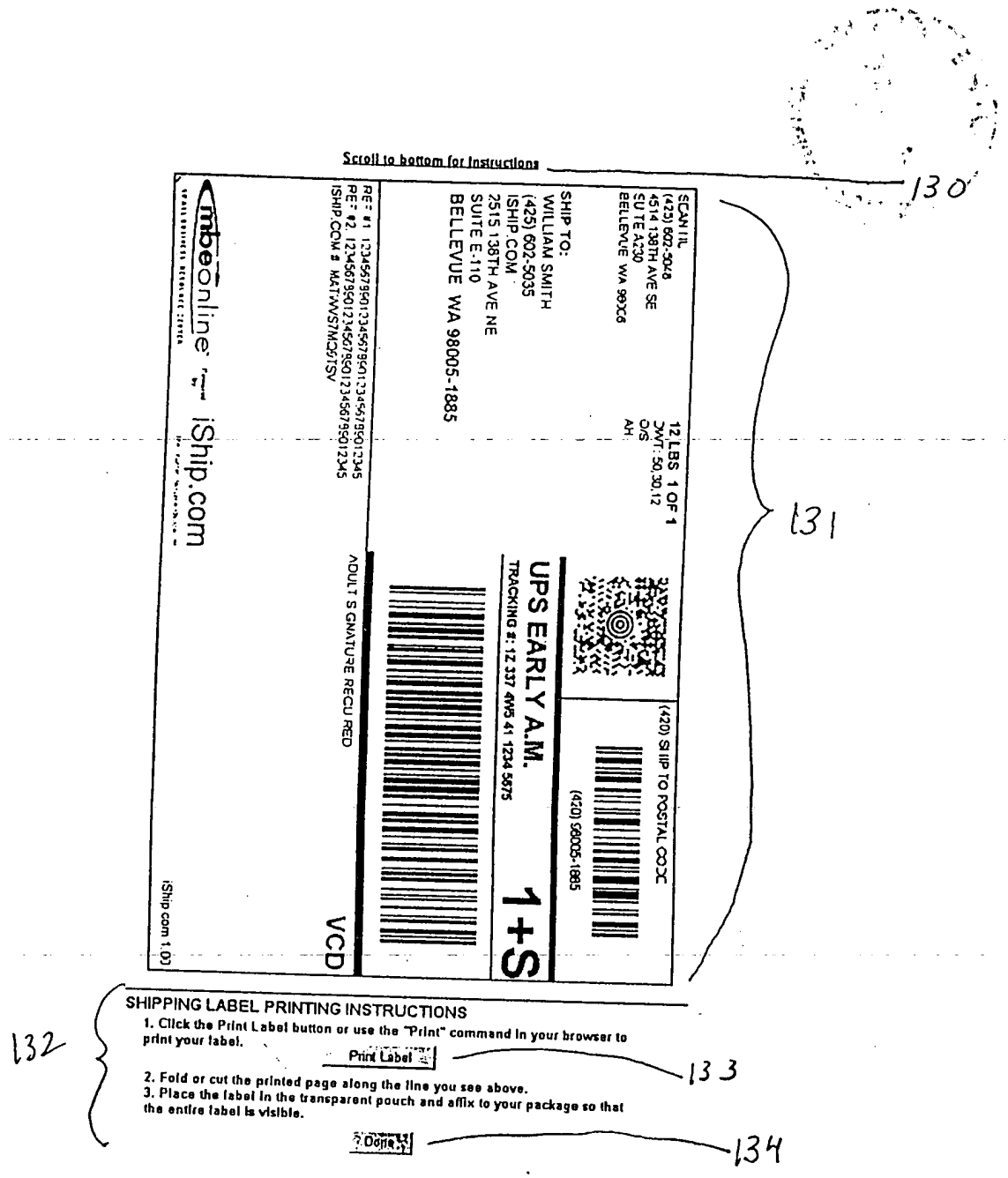

Scroll to bottom for instructions
130
SCAN IIL
(425) 602-5048
4514 136TH AVE SE
SU TE A230
BELLEVUE WA 98006
12 LBS 1 OF 1
DWT: 50.30.12
D/S
AH
SHIP TO:
WILLIAM SMITH
(425) 602-5035
ISHIP.COM
2515 136TH AVE NE
SUITE E-110
BELLEVUE WA 98005-1885
131
UPS EARLY A.M.
TRACKING #: 1Z 337 4W5 41 1234 5675
1+S
(420) SHIP TO POSTAL CODE
(420) 98005-1885
RE: #1 12345679501234567950123456795012345
RE: #2. 12345679501234567950123456795012345
ISHIP.COM # MATWVSTM2G1SV
ADULT SIGNATURE REQUIRED
VCD
mbeonline
iShip.com
iShip.com 1.0
SHIPPING LABEL PRINTING INSTRUCTIONS
132
1. Click the Print Label button or use the "Print" command in your browser to print your label.
Print Label
133
2. Fold or cut the printed page along the line you see above.
3. Place the label in the transparent pouch and affix to your package so that the entire label is visible.
Done
134

FIG. 11

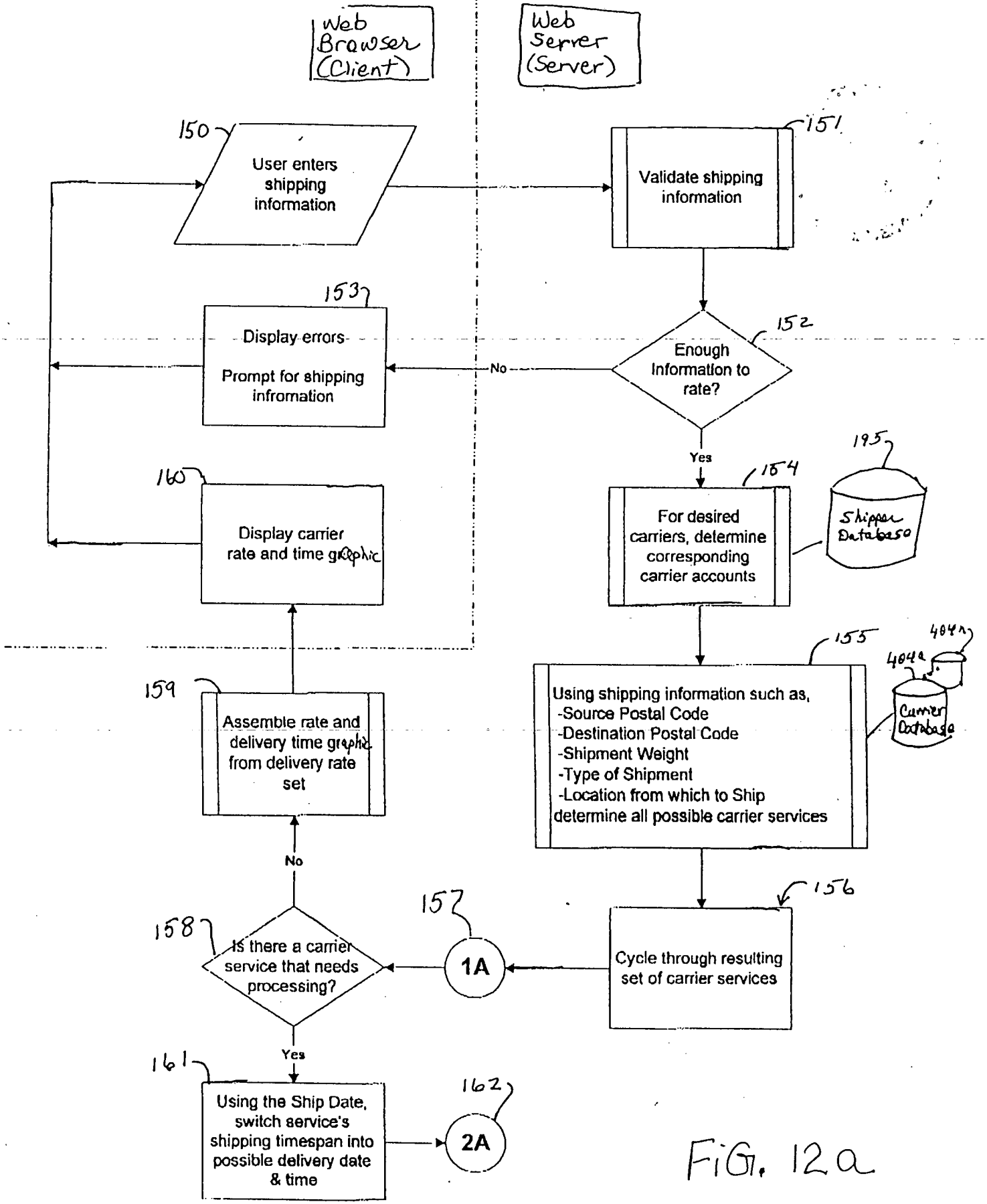

Web Browser (Client)
Web Server (Server)
150
User enters shipping information
151
Validate shipping information
152
Enough Information to rate?
No
153
Display errors
Prompt for shipping infromation
Yes
154
For desired carriers, determine corresponding carrier accounts
195
Shipper Database
155
Using shipping information such as,
-Source Postal Code
-Destination Postal Code
-Shipment Weight
-Type of Shipment
-Location from which to Ship
determine all possible carrier services
404a
404n
Carrier Database
156
Cycle through resulting set of carrier services
157
1A
158
Is there a carrier service that needs processing?
No
Yes
159
Assemble rate and delivery time graphic from delivery rate set
160
Display carrier rate and time graphic
161
Using the Ship Date, switch service's shipping timespan into possible delivery date & time
162
2A

FIG. 12a

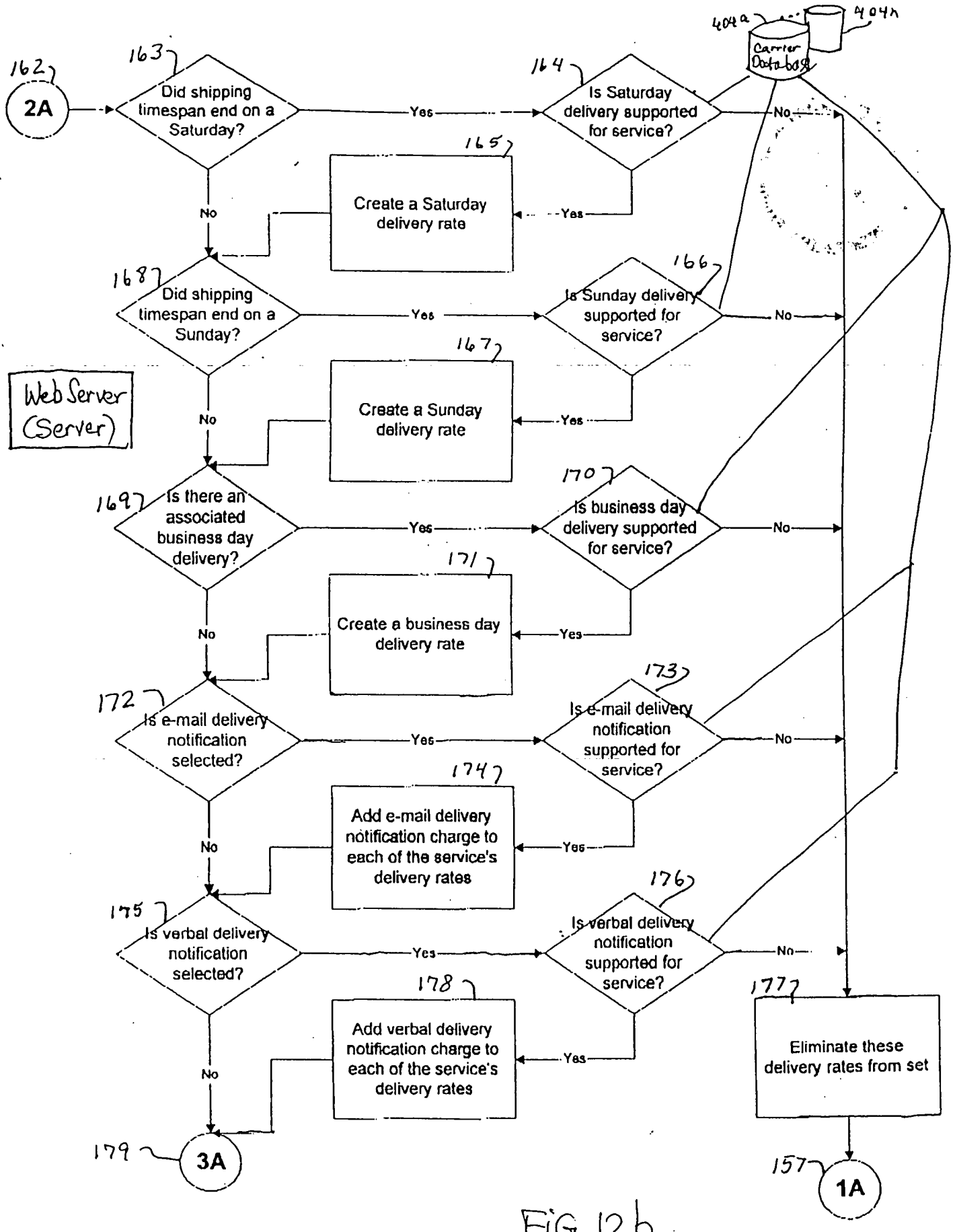

404a
404n
Carrier Database
162
2A
163
Did shipping timespan end on a Saturday?
Yes
164
Is Saturday delivery supported for service?
No
Yes
165
Create a Saturday delivery rate
No
168
Did shipping timespan end on a Sunday?
Yes
166
Is Sunday delivery supported for service?
No
Yes
167
Create a Sunday delivery rate
No
Web Server (Server)
169
Is there an associated business day delivery?
Yes
170
Is business day delivery supported for service?
No
Yes
171
Create a business day delivery rate
No
172
Is e-mail delivery notification selected?
Yes
173
Is e-mail delivery notification supported for service?
No
Yes
174
Add e-mail delivery notification charge to each of the service's delivery rates
No
175
Is verbal delivery notification selected?
Yes
176
Is verbal delivery notification supported for service?
No
Yes
178
Add verbal delivery notification charge to each of the service's delivery rates
No
179
3A
177
Eliminate these delivery rates from set
157
1A

FIG. 12b

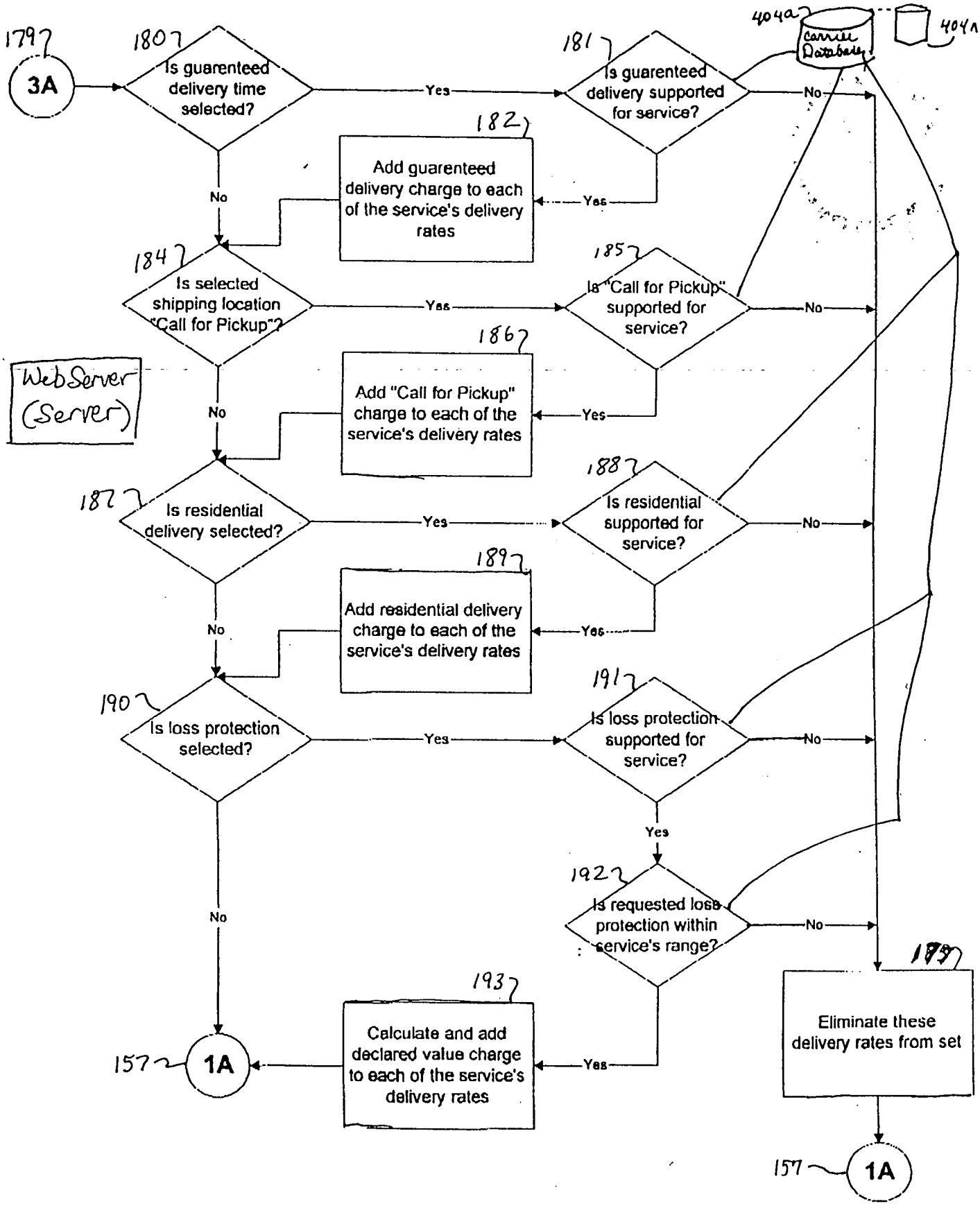

179
3A
180
Is guarenteed delivery time selected?
Yes
181
Is guarenteed delivery supported for service?
No
404a
Carrier Database
404n
182
Add guarenteed delivery charge to each of the service's delivery rates
Yes
No
184
Is selected shipping location "Call for Pickup"?
Yes
185
Is "Call for Pickup" supported for service?
No
186
Add "Call for Pickup" charge to each of the service's delivery rates
Yes
No
Web Server (Server)
187
Is residential delivery selected?
Yes
188
Is residential supported for service?
No
189
Add residential delivery charge to each of the service's delivery rates
Yes
No
190
Is loss protection selected?
Yes
191
Is loss protection supported for service?
No
Yes
192
Is requested loss protection within service's range?
No
193
Calculate and add declared value charge to each of the service's delivery rates
Yes
157
1A
193
Eliminate these delivery rates from set
157
1A

FIG. 12C

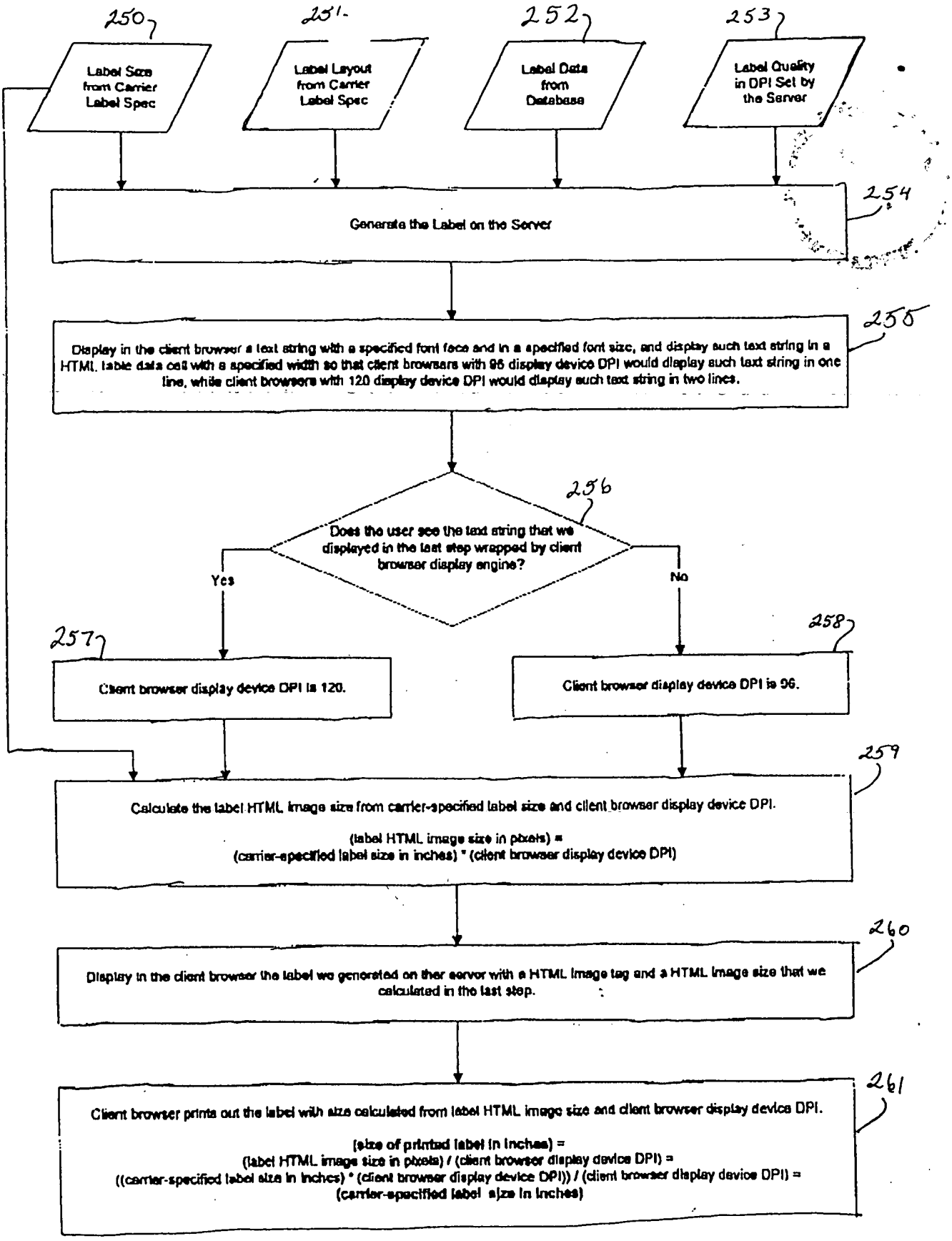

250
Label Size from Carrier Label Spec
251
Label Layout from Carrier Label Spec
252
Label Data from Database
253
Label Quality in DPI Set by the Server
254
Generate the Label on the Server
255
Display in the client browser a text string with a specified font face and in a specified font size, and display such text string in a HTML table data cell with a specified width so that client browsers with 96 display device DPI would display such text string in one line, while client browsers with 120 display device DPI would display such text string in two lines.
256
Does the user see the text string that we displayed in the last step wrapped by client browser display engine?
Yes
No
257
Client browser display device DPI is 120.
258
Client browser display device DPI is 96.
259
Calculate the label HTML image size from carrier-specified label size and client browser display device DPI.
(label HTML image size in pixels) =
(carrier-specified label size in inches) * (client browser display device DPI)
260
Display in the client browser the label we generated on ther server with a HTML image tag and a HTML image size that we calculated in the last step.
261
Client browser prints out the label with size calculated from label HTML image size and client browser display device DPI.
(size of printed label in inches) =
(label HTML image size in pixels) / (client browser display device DPI) =
((carrier-specified label size in inches) * (client browser display device DPI)) / (client browser display device DPI) =
(carrier-specified label size in inches)

FIG. 13a

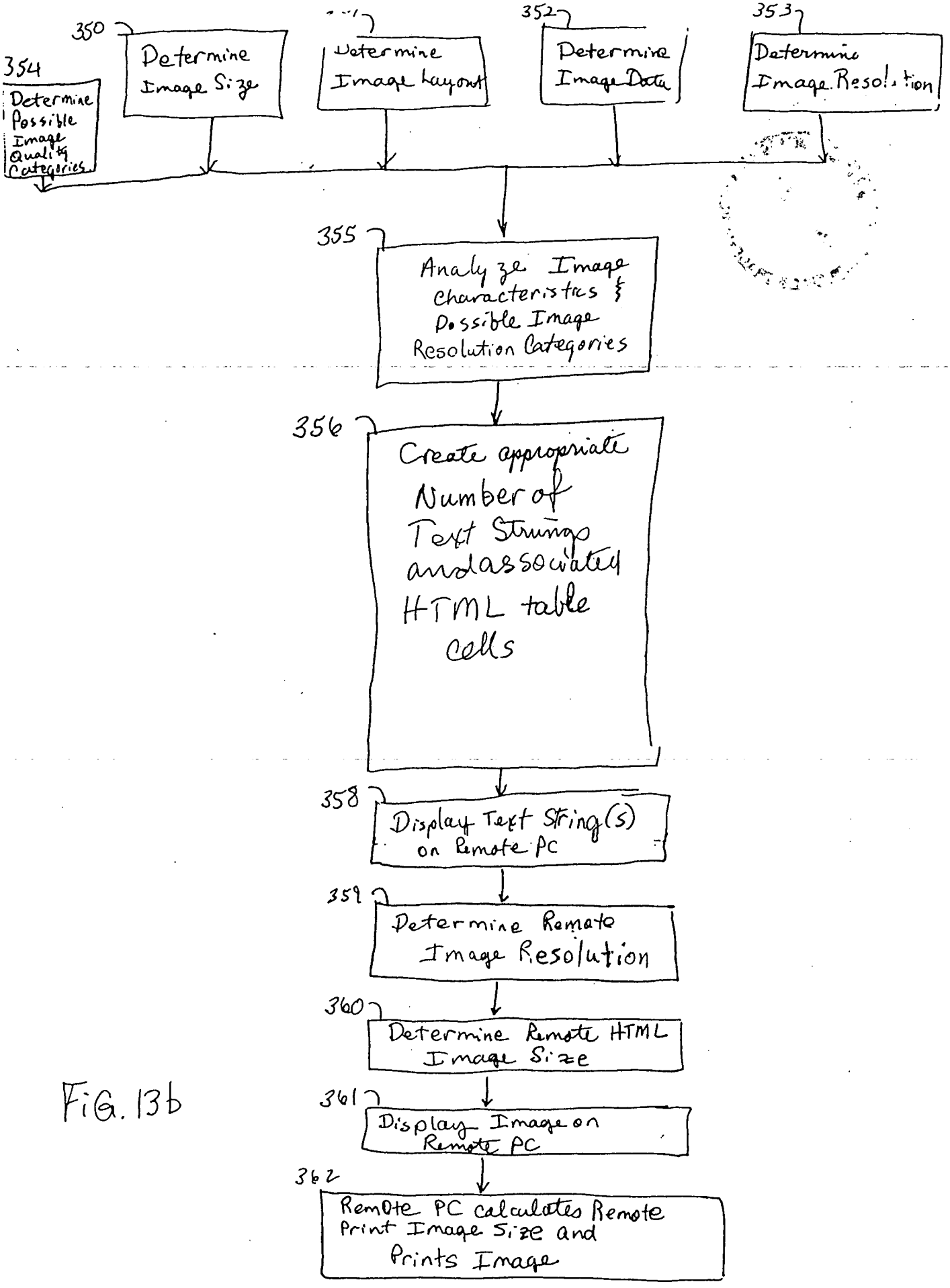

350
Determine Image Size
Determine Image Layout
352
Determine Image Data
353
Determine Image Resolution
354
Determine Possible Image Quality Categories
355
Analyze Image Characteristics & Possible Image Resolution Categories
356
Create appropriate Number of Text Strings and associated HTML table cells
358
Display Text String(s) on Remote PC
359
Determine Remote Image Resolution
360
Determine Remote HTML Image Size
361
Display Image on Remote PC
362
Remote PC calculates Remote Print Image Size and Prints Image

Fig. 13b

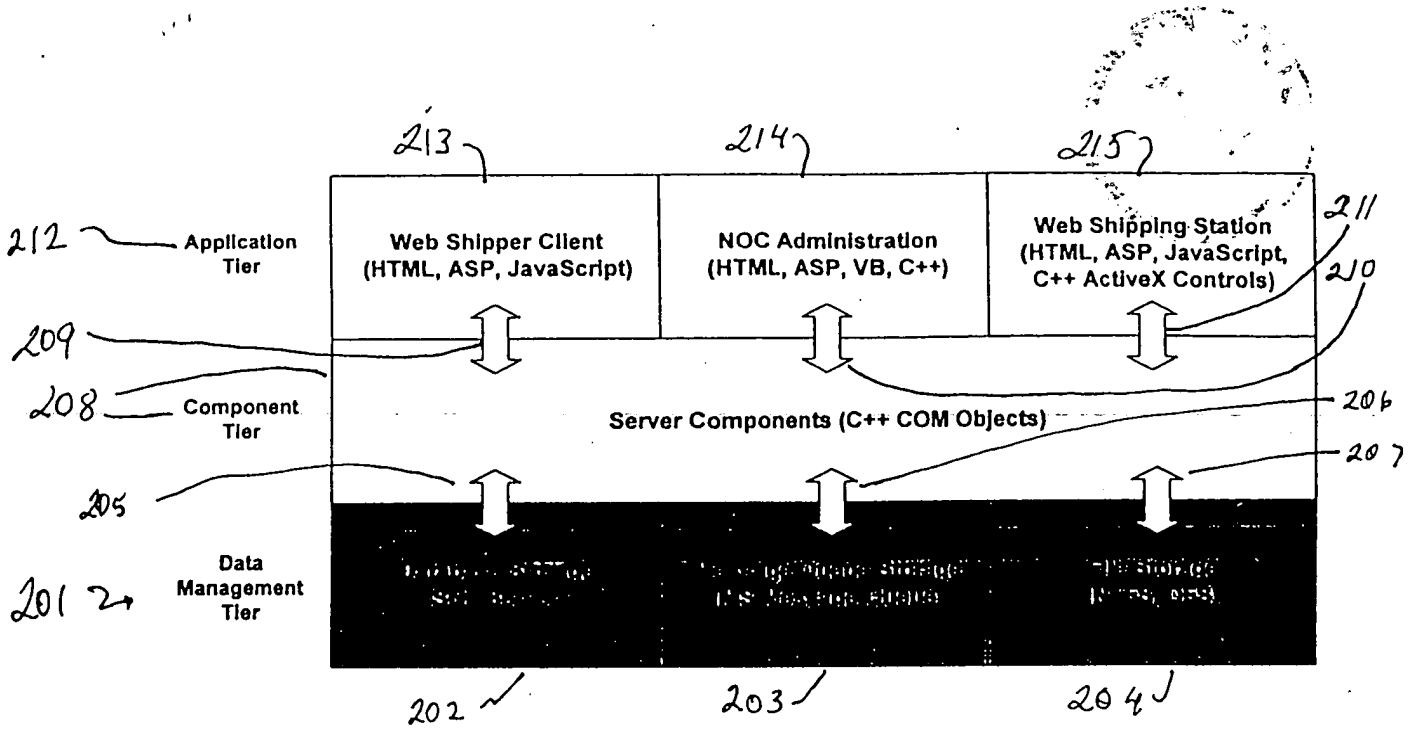

213
214
215
212
Application Tier
Web Shipper Client (HTML, ASP, JavaScript)
NOC Administration (HTML, ASP, VB, C++)
Web Shipping Station (HTML, ASP, JavaScript, C++ ActiveX Controls)
211
210
209
208
Component Tier
Server Components (C++ COM Objects)
206
207
205
201
Data Management Tier
202
203
204

FIG. 14

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